TAMPEREEN TEKNILLINEN YLIOPISTO
TAMPERE UNIVERSITY OF TECHNOLOGY

VILI LAITINEN

BUSINESS AND IT ALIGNMENT IN A GLOBAL INDUSTRIAL ORGANIZATION

Master of Science thesis

Examiner: prof. Samuli Pekkola
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ABSTRACT

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Business and information technology (IT) alignment is a constant concern and challenge for organizations. It is a holistic activity of aligning both the operational and strategical levels of the business and IT entities in organizations, but also includes observing the alignment and alignment process itself. Business and IT alignment is a mindset and guiding principle that ought to be visible in all parts and levels of the cooperation between business and IT.

With the large scope of business and IT alignment, it has varying and iconic challenges connected to it. Holistic strategy formation, extensive communication and great leadership are some requirements of sufficient alignment. The challenge of acquiring these and numerous other perspective of business and IT alignment is not simple. To aid in this different models and frameworks can be utilized to understand the dependencies and focus areas of the alignment.

One approach to business and IT alignment is to assess it through different viewpoints. The alignment can be seen to have three dimensions; functional, structural and dynamical dimension. Functional dimension addresses the strategic fit of the organization on both and IT and business side including the guiding infrastructure principles. Structural alignment focuses on the structural fit between the reality in the organization and strategic needs it ought to fill. Dynamical dimension evaluates the temporal aspect of the alignment. This refers to for example the organizations ability the react and execute change.

These three dimensions were utilized together to identify business and IT alignment challenges in the case organization. The empirical method used to assess the organization were theme interviews, to which 14 executives from different parts of the organization took part. As a result 32 challenges were identified form all of the dimension together. The aim of the research was to provide understanding of the current challenges in business and IT alignment in a global industry organization such as the case organization. The results are also a good starting point of whatever development activities the case organization would like to execute in the business and IT alignment.

TIIVISTELMÄ

VILI LAITINEN: Liiketoiminnan ja IT:n yhteensovittaminen globaalissa teollisuusyrityksessä
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Avainsanat: Liiketoiminnan ja IT:n yhteensovittaminen, haasteet, funktionaalinen yhteensovittaminen, rakenteellinen yhteensovittaminen, dynaaminen yhteensovittaminen

Liiketoiminnan ja informaatioteknologian (IT) yhteensovittaminen on jatkuvat huolenaihe ja haaste organisaatioille. Sillä tarkoitetaan kokonaistavaltaista toimintaa liiketoiminnan ja IT:n operaationaalisen sekä strategisen tason yhteensovittamisessa, sisältäen myös yhteensovittamisen havainnoinnin sekä yhteensovittamisprosessin. Liiketoiminnan ja IT:n yhteensovittaminen on ajattelutapa sekä ohjaava periaate, jonka tulisi olla näkyvissä jokaisessa osassa sekä jokaisella tasolla liiketoiminnan ja IT:n välisessä yhteistyössä.

Laajan rajauksen vuoksi liiketoiminnan ja IT:n yhteensovittamisessa on vaihtelevia sekä toistuvia haasteita. Kokonaisvaltainen strategianluontiprosessi, kattava kommunikointi ja tasokas johtaminen ovat esimerkkejä vaatimuksista toimivaan yhdistämiseen. Haaste näiden ja monien muiden vaatimusten täyttämisessä ei ole yksinkertainen. Tätä voidaan kuitenkin helpottaa lähestymällä liiketoiminannan ja IT:n yhteensovittamista erilaisten mallien ja viitekehysten avulla.

Yksi lähestymistapa liiketoiminnan ja IT:n yhteensovittamiseen on arvioida sitä eri näkökulmista. Yhteensovittamisessa voidaan nähdä olevan kolme ulottuvuutta; funktionaalinen, rakenteellinen sekä dynaaminen ulottuvuus. Funktionaalinen ulottuvuus käsittelee strategista yhteensopivuutta liiketoiminta ja IT:n välillä. Rakenteellinen ulottuvuus keskittyy organisaatiossa olevien rakenteiden ja käytäntöjen sopivuuteen strategian kanssa. Dynaaminen ulottuvuus arvioi yhteensovittamisen ajallisia ominaisuuksia. Tämä tarkoittaa esimerkiksi organisaation kykyä reagoida tai toteuttaa muutoksia.

Näitä kolmea ulottuvuutta käytettiin yhdessä arvioimaan haasteita kohdeyrityksessä. Empiirisenä menetelmänä haasteiden löytämiseen käytettiin teemahaastattelua, johon valittiin 14 johtajaa yrityksen eri osista. Tuloksena kaikista kolmesta ulottuvuudesta löydettiin yhteensä 32 haastetta. Tutkimuksen tavoitteena oli löytää tämänhetkiset haasteet, joita globaali teollisuusyritys, kuten kohdeyritys, kohtaa toiminnassaan. Tulokset ovat myös hyvä lähtökohta kohdeyritykselle liiketoiminnan ja IT:n yhteensovittamiseen liittyvissä mahdollisissa kehityshankkeissa.

PREFACE

This document is a thesis from Tampere University of Technology that addresses business and IT alignment challenges in the case organization. The case organization sponsored the research and provided the opportunity for the study. I want thank the case organization for the opportunity to complete my studies and this thesis in their company. The organization has been supporting and flexible towards the research and made it possible for me to complete my studies and grown professional experience at the same time. For this I want acknowledge and formally thank the case organization, my coordinator from the company and colleagues how have helped me during the thesis process.

A large part of the credits from this thesis belong to the Tampere University of Technology and the knowledgeable coordinators that have helped to narrow down and form the research. The comments from my university coordinator Samuli Pekkola have been extremely helpful and for that acknowledgement is in order.

The highest appreciation and gratitude needs to be expressed towards my fiancé. Without her constant support and encouragement this thesis process would have lasted much longer and been significantly harder to execute. My highest regards belong to her. Thank you for helping me so much as you did.

Tampere, 20.4.2016

Vili Laitinen

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LIST OF ABBREVIATIONS

ACM DL	Association for Computing Machinery Digital Library
CAAR	Change Assessment Architecture Realignment
ERP	Enterprise Resource Planning
IT	Information Technology
MBO	Multi Business Organization
R&D	Research and Development
SAM	Strategic Alignment Model
SAP	Systems, Application and Products
SBU	Sub Business Unit
SIM	Society for Information Management
SOA	Service Oriented Architecture
TUT	Tampere University of Technology

1. INTRODUCTION

This thesis explores business and information technology (IT) alignment in a global industrial organization. This chapter gives an overview to the thesis and explains background and the structure of the paper. The building blocks of business and IT alignment are addressed throughout the thesis, but definition for the term is as follows; *"the degree to which the IT applications, infrastructure and organization, enable and support the business strategy and processes, as well as the process to realize this."* (Silvius 2009, p. 560). This is a broad definition, but successfully highlights what business and IT alignment in its core means.

1.1 Research background

The topic of business and IT alignment is a highly researched and firmly established area in both business world and in academic research. To justify this claim one does not need to look too far for the evidence. There are multiple recent empirical papers that point to a positive relationship between IT alignment and business performance which explains the business world's interests to the topic (e.g. Gerow et al. 2014, Oh and Pinsonneault 2007). Business and IT alignment is also an actively written topic in the academic world. For example Google Scholar, an academic paper search engine, gave 1020 links to academic papers published during year 2015 with the search word "IT alignment" (Google Scholar 2016a).

Business and IT alignment topic is a relatively matured topic. Coltman et al. (2015, p. 2) explain in their paper; *Strategic IT alignment: twenty-five years on* that the genesis of IT alignment dates back to 80´s. A project in called "*MIT90s*" was started in 1984 and aimed to build a framework that would show the relationship between the most critical parts of business strategy, structure, technology, people and management. This project extended over the ten largest IT users of the time and lasted over eight years. (Coltman et al. 2015, p. 2) The reason why Coltman et al. (2015) highlighted the importance of this project in the business and IT alignment research is the fact that one of the most known models, the Strategic Alignment Model (SAM), emerged from this project (Henderson and Venkatraman 1990, Henderson and Venkatraman 1993). SAM is also used in this thesis as it is still valid in many ways. Before this project, there was no research of this scale on business and IT alignment (Coltman et al. 2015, p.7). To put the project to a perspective the first commercial computers popularized around the same time as Xerox PARC Alto was introduced at 1976 and the Apple II in 1977 (Computer History Museum 2015). It can be

said that MIT90s project marks the start of the business and IT alignment research that has continued actively ever since.

Coltman et al. (2015, p. 4) point out that business and IT alignment research has evolved and needs to continue to evolve. Single strategy or single business segment approaches have been researched extensively and have taught a lot about IT alignment. Though these approaches might be too narrow for modern needs. Next step forward in the research could be different kind of multi-level and cross-level approaches to business and IT alignment. (Coltman et al. 2015, p. 4) Thus this thesis also relays to one of the newer approaches. Reynolds and Yetton (2013, p. 2) theorize that approaching business and IT alignment from the point of view of multiple models will lead to a more comprehensive findings. Reynolds and Yetton (2013) multi model approach was tested in a recent case study by Pekkola and Nieminen (2015), whom found it to be beneficial approach (Pekkola and Nieminen 2015). Multi model approach uses three different model from three dimension of business and IT alignment, which ought to give a holistic view of the business and IT alignment concept (Reynolds and Yetton 2013). The multi model approach is covered in detail in the later chapters.

As business and IT alignment is fairly a matured topic when it comes to academic management research, there are claims of it being useless or pointless. It is reasonable to argue that business and IT alignment should already be an inherent part of management and that focusing on it cannot produce meaningful competitive advantage. Chan and Reich (2007a, p. 298) have listed some of these claims;

1. Business and IT alignment research cannot capture real life as it is too mechanistic.
2. Business and IT alignment is not possible if strategy is unknown or in progress.
3. Business and IT alignment is not desirable as an end in itself since the business must always change.
4. IT should often challenge the business, not follow it.

Chan and Reich (2007a, p. 298) point out, above listed counter-arguments should be seen as challenges in business and IT alignment more than as reasons to stop the research or question the meaningfulness of the topic. In other words business and IT alignment can be executed poorly and some of the possible mistakes are listed above. This thesis shares the views of Chan and Reich (2007a, p. 298) that business IT alignment is not a single dimensional factor or process, but instead has many perspectives and multiple ways of bringing value to organizations.

1.2 Research motivation

The organization, that the thesis was conducted in, gave great freedom when it came to choosing the topic. The following explanation of the background of the research aims to give the reader a better insight to the thesis. The case organization has gone through major

changes in the operational, strategy and IT levels during a short time. For example in the operational side, service business has been risen to a more significant role. Concerning the strategy, organization has gone through meaningful changes on focusing in higher profit margin businesses and even sold a part of the company to make organization fit better to the future strategic needs. In IT the latest major change has been the introduction of a new IT partner and server capacity virtualization. These are just some of the changes that have taken part in the case organization in the span of less than 3 years from the writing of this thesis.

Change itself might not be a challenge in business and IT alignment. Instead the lag between the realizations of the change, is what rises the challenges for organizations. (Chan and Reich 2007a, p. 299) It is reasonable to assume that the changes have caused some lag inside the case organization and locating these points will surely help the organization align its operations. Beside all of the changes, the case organization is in a challenging state when it comes to market situation. From the comparison period of the first quarter of 2014 to the first quarter of 2015 the order intake had declined 9%. At that time even the CEO of the company emphasized, in one of the internal blog posts, the importance of staying focused on the personal and strategic goals. It was mentioned that growth from the market is not expectable, so introducing growth is completely in the organization´s own hands. Thus it seems that staying focused on the common goals is important for the case organization. Business and IT alignment research in ways answers questions related to strategic focus. These are some of the points that served as the motivation behind formulating the topic of the thesis.

1.3 Research problem, research questions

The aim of the research is to take a look at the current state of business and IT alignment in the case organization. This can be achieved by identifying challenges in the business and IT alignment with the chosen methods and through this help the further development inside the case organization. Conclusions provide justified findings or facts about the challenges in the alignment. The case organization can then interpret the findings as it sees fit.

Thus the research question is addressed as follows:

- What business and IT alignment challenges can be identified in the case organization?

The multi model approach to business and IT alignment is relatively new thus using the approach itself is also important part of the thesis. The multi model approach to business and IT alignment has theoretical justification with the Reynolds and Yetton (2013) concept and from Pekkola and Nieminen (2015) case study. Though it was still questionable will the approach yield wanted benefits in practice. Thus another case like this thesis will

be a good addition to the academic research. Before that the concept of business and IT alignment has to be explained as it makes it easier to understand both the multi model approach and the findings.

This leads to the four research problems:

- What is business and IT alignment?
- What does business and IT alignment mean for organizations?
- What is multi model approach to business and IT alignment?
- What kind of problems is the case organization facing with business and IT alignment?

The first two research problems need to be understood so that the meaning of business and IT alignment for organizations can be understood. The third research problem revolves around the selected theoretical framework of the thesis. Finally the fourth research questions aims to identify the current challenges in the case organization. Answers from these questions form the answer to the research question.

1.4 Limitations and scope

The methods chosen for the thesis are literature review of valid academic literature about business IT alignment and interviews inside the case organization. Case organization is a global organization that is present in about 50 countries with over 12 000 employees thus a complete assessment of IT alignment by one researcher was not possible nor expected. As a word of advice from the case organization, the thesis was asked to be simple and in medium scale, but to have a global view. Thus the empirical method reflect this. Theme interviews were used to make qualitative and quantitative observation of business and IT alignment in the organization. Literature review served as a base for the empirical study and helps to justify the findings. When it comes to business and IT alignment the dominant perspective in this paper is IT. Business perspective was noted but the challenges and possibilities focus areas are presented from the point of view of IT.

This kind of approach limited the possibilities of the thesis. Limited qualitative study makes it impossible to present in-depth organization wide suggestion to answer the challenge that were identified. What is possible and justified, was to analyze and process the findings based on the literature of business IT alignment and this led to some suggestions. To summarize the aim is not to suggest in-depth corrective actions inside the case organization, but to provide a good baseline for internal evaluation and point out some possible focus areas.

1.5 Research structure

The structure of the thesis is presented in the figure 1. Chapters can be divided in two parts. The first part provides the background of the thesis and the theoretical framework and the second part is focused on the empirical research, findings and forming the conclusions.

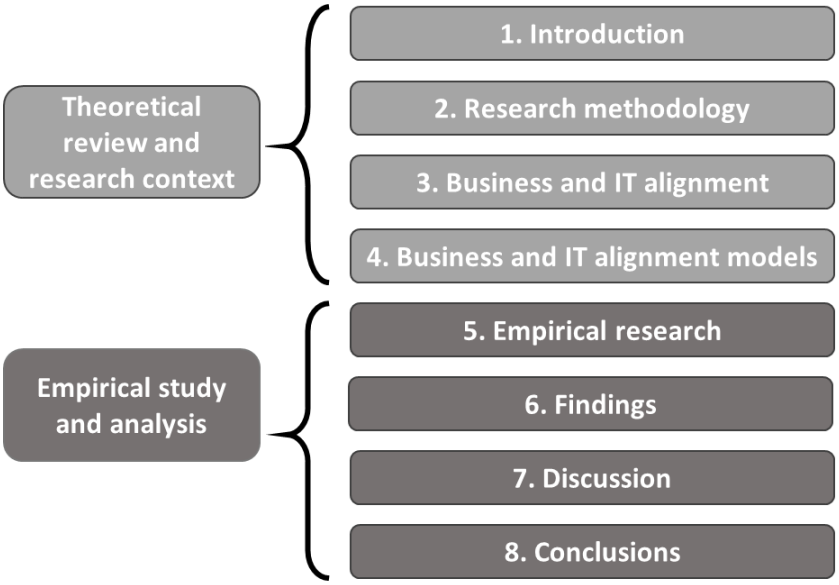

Figure 1. *Research structure*

The first chapter, introduction, explains the research background, motivation and goals. Giving a clear picture what the thesis aims to explain and wanted results. The second chapter methodology opens the underlying philosophies and guidelines that are consistent throughout the paper. Methodologies chapter aims to explain the though process and patterns effecting the analysis and findings of the thesis. Following methodologies chapters three and four explain the literature connected to the thesis. Chapter three start form the concept of business and IT alignment leading to justifying its´ importance and challenges. Chapter four then takes a deeper look at the academic concept and models used as the basis of analysis in the thesis. The fourth chapter is the most critical in order to be able to interpret the finds in the second half of the thesis.

The second part of the thesis starts with the explanation of the empirical research. This chapter explains the case organization in more details so that the findings can be understood in the right context. The main content of fifth chapter is the introduction of the interview execution and interviewees. Chapter six point summarizes the findings of the thesis. This chapter combines the results on the interviews with the theoretical framework of the first half of the thesis. Chapter seven then takes a holistic look at the findings and explores some of the challenges in a deeper level and provides possible solutions based on the literature review. The final chapter eight, conclusions, summarizes the thesis and the answers to the research question and problems.

2. RESEARCH METHODOLOGY

The research methodology chapter explains the philosophies behind the thesis. In the methodologies, the methods used in the research are introduced on a general level. Besides this general theory of the empirical methods is covered on the latter half. Chapter clarifies to the reader the thought process behind choosing the methods and approaches.

2.1 Methodology

The research methodology of the thesis is summarized in the figure 2. Saunders et al. (2009, p. 108) research onion provides a sufficient model for addressing all relevant questions when it comes to research philosophy and methodology. Hirsjärvi et al. (2007, p. 125) emphasize that understanding philosophical question related to research makes it easier to realize the logical arguments behind the findings and helps to select the proper research methods. Below all the different layers of the research onion are explained in more detail.

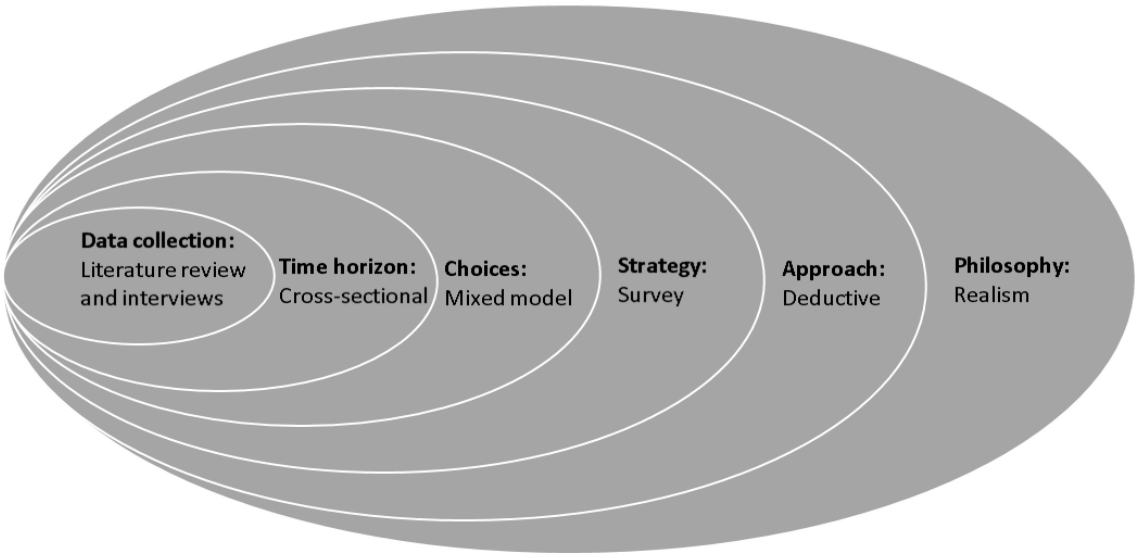

Figure 2. *Summary of research methodology (Adopted from Saunders et al. 2009, p. 108)*

The most outer layer of the research onion describes the philosophical approach of the thesis. Table 1 shows some common research philosophies and different approaches to them. The two major ways to approach research philosophy are epistemology and ontology (Saunders et al. 2009, p. 108). Epistemology focuses on what is acceptable knowledge and what is appropriate method for gathering it. Ontology on the other hand focuses on what is real or reality. (Hirsjärvi et al. 2007, p. 126) In this paper business and IT alignment and its effect in organizations are in the central role. Questioning the reality of business and IT alignment and its effects is not meaningful nor productive. Instead

focusing on the best ways to acquire, combine and evaluate information and knowledge considering business IT alignment is much more impactful and justified. Thus just considering the epistemological approaches to research philosophy is enough.

Table 1. *Research philosophy framework (adopted from Saunders et al. 2009, p. 119 and Bryman 2012, pp. 27-30)*

	Positivism	**(Critical) Realism**	**Interpretivism**
Epistemology: View of acceptable knowledge	Observed phenomena provides facts. Aims to form causalities or laws to simplify the phenomena.	**With proper methods observed phenomena can produce acceptable data.**	Phenomena's are unique and subjective. Focus on details of the current situation and understanding them in the phenomena's context.
Data collection characteristics	Large sample size, quantitative	**Must fit the subject, quantitative and/or qualitative**	Small sample size, qualitative

In the table 1 realism is highlighted because it was seen to be the most suitable philosophical framework. All approaches to the research philosophy might work with this thesis, but realism or critical realism fits to the goals and limitations the best. There are two major forms of realism; direct realism and critical realism. In critical realism phenomena's like business and IT alignment are considered as true and exist outside of human mind. Human mind then forms its´ own picture of the phenomena's. One can only change the phenomena if its´ structure is understood. (Bryman 2012, p. 29) In direct realism, line between human mind observations and the phenomena is not drawn. Meaning in direct realism what you see is what you get. (Saunders et al. 2009, p. 115) This might be too optimistic way of understanding what knowledge is acceptable. Also Saunders et al. (2009, p 115) argue that critical realism fits better to business management research than direct realism, since in critical realism observing phenomena's on different level (e.g. organizational levels) will produce different kind of pictures of the reality. Thus critical realism philosophy fits very well with the thesis and the used approach of multi model analysis.

The approach of this thesis is deductive. In short, deductive approach means testing an existing theory. Other common approach is inductive, which means building a theory. (Saunders et al. 2009, p.124) IT alignment is vastly studied theme. For example Chan and Reich (2007b) alone wrote summaries of 150 IT alignment articles. Thus for the purpose of this thesis selecting appropriate framework to be used in the case organization is a valid approach. Though because the multi model analysis used in this occasion is not yet widely used (Coltman et al. 2015, p. 4), possibility of forming new knowledge in the context of business and IT alignment is probable. Thus some inductive findings are possible.

The chosen research strategy is a survey research. Survey research aims to answer questions like who, what, where, how much and how many (Saunders et al. 2009, p. 144). This is directly connectable to the empirical part of the thesis. Focus is in mapping the challenges and the role of the case organization is generalized as much as possible. Arguably this paper is also close to a case study, but survey strategy philosophy is closer to the goals of the thesis. Usually structured ways of collecting data are used to answer these questions. Methods common to this research strategy are structured interviews or surveys. (Hirsjärvi et al. 2007, p. 130) Though in this thesis highly structured approach might not yield the best results. Business and IT alignment is a fairly abstract subject and even though it has many models with specific criteria for success (e.g Broadbent and Weill 1993, Sabherwal et al. 2001 or Henderson and Venkatraman 1993), these criteria can be hard to point out explicitly. Thus semi-structured methods like a theme interview are more suitable in this case.

The nature of the research is both descriptive and explanatory. Saunders et al. (2009, p. 140) point out that this is very common since purely descriptive research could leave readers wanting for conclusions. This is a valid point since what good is a profound understanding of a situation if you cannot use it to better or develop the situation. This kind of research is called descripto-explanatory study (Saunders et al. 2009, p. 140).

This thesis used different research methods for data collection. Figure 3 illustrates the research process. Literature review provides base knowledge for the interviews. This kind of research is called mixed model research (Saunders et al. 2009, p. 152). Different methods are not used in parallel, but sequentially. Also analysis was done in a mixed manner using mainly qualitative but also quantitative methods. This thesis only evaluates the situation in a short time frame. Only one set of interviews was used to gather the data. This kind of research taken place in a short period of time is called cross-sectional research. (Saunders et al. 2009, p. 155) All research methods provide data from that moment of time. The results are to be considered valid at the time but are objected to change over time. Also very little can be said how time can affect the findings.

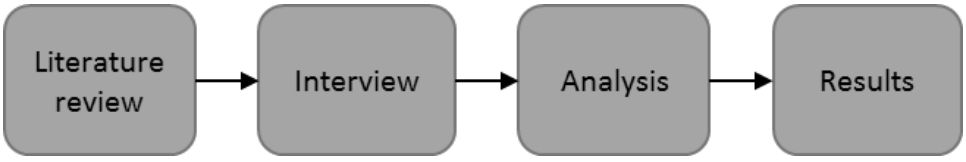

Figure 3.*Research process*

Data collection methods used are literature review and semi-structured theme interviews. Both quantitative and qualitative data is useful for answering the research question. The realism philosophy shows throughout the methodology. Finding the most suitable methods and approaches to answer the research questions is important to produce valid findings.

2.2 Literature review

As important it is to understand the underlining ideas behind the thesis, it is also essential to have a clear picture how the research was actually conducted. As mentioned above this research has both theoretical research in the form of literature review, but also empirical study. Here both of these approach are explained in the context of this thesis.

Saunders et al. (2009, p. 58) listed two major reason why literature review is essential for a thesis or any project in general. First literature review is the tool for the preliminary research required to formulate a good research topic and problems. Second to provide the base for the findings and analysis. This is called critical literature review (later literature review) and is usually part of the final text or project. (Saunders et al. 2009, p 59), which is also the case in this paper. Chapters three and four focus only in the literature of business and IT alignment. Beside this later on literature sources are used to further justify or rationalize the findings.

The main methods of finding sources for this thesis are electronic databases available to the students of Tampere University of Technology (TUT). Mainly Google Scholar (https://scholar.google.fi/) and NELLI-portal (http://www.nelliportaali.fi/) were used to find the sources for the thesis. Both of these search engines look for relevant source material from a variety of scientific database e.g. IEEE (http://ieeexplore.ieee.org/), ACM DL (http://dl.acm.org/), Springer Link (http://link.springer.com/) or Science Direct (http://www.sciencedirect.com/). When searching from databases search words like “IT alignment”, “Business and IT alignment” and “Business and Information Technology alignment” are used as the base for the search. These search or key words are relatively general and thus other search words to focus on specific areas of the topic were added to the searches e.g. “challenges” or “definition”. Finally limiting and evaluating result with different filters like publishing year or authors gave a good overview of the literature around the business and IT alignment.

Even though the electronic articles are the most used source of information for this thesis, also other sources and channels were used if they are relevant. For example standards and best practice papers or concepts were usable and valid sources for the thesis. With any source the critical assessment and evaluation of it is essential to produce valid results and findings. Hirsjärvi et al. (2007, p. 109) highlight four areas where to focus when assessing a possible source:

1. Authors reputability and recognition
2. Source age and origin
3. Sources believability and publishers
4. Objectivity and financial independence

When it comes to these points, the second and the third point were valuated highest. In practice this means trying to find the most current sources on each subject from respected

publishers that for example were listed above. When of only using respected publishers, the author evaluation is not seen important. Nevertheless reputable authors' text might be used despite the text being for example aged if deemed still valuable. The last point on the list means avoiding source that are clearly connected to financial gain. For example papers published or sponsored by companies are to a degree always bias and can be used only in a form of example or reference to reality. These examples and reasoning should provide reader enough visibility to the critical assessment of the sources so that arguments of this paper can be viewed reasonable and valuable.

2.3 Empirical method

As the aim is to gain sufficient understanding of the current situation in the organization, the empirical methods need reflect that. The researcher was actively part of the organization during the research, which made the empirical study easier to approach. The main empirical method of the research were the theme interviews conducted in the organization. More detailed explanation of the actual process of interviewing and the approach taken is written in the chapter 5.2. The research question is to map the current challenges in the case organization thus there was a need to have a forum for the organization to present the current situation and challenges. For this theme interviews were an ideal data gathering method. Interviews are very flexible tool for data gathering and give a change to adapt to the interviewees knowledge. (Hirsjärvi et al. 2007, p. 200) For example interviews give an option to present questions of similar agenda to variety of different personnel from different parts of organization by adapting to the interviewee. Interviews also allow to focus on certain areas of interest (Hirsjärvi et al. 2007, p. 200). Even though in the thesis the themes and questions (appendix A) were the same for everyone, it was useful that there was an option to focus on certain questions or certain areas with any specific interviewee that has more knowledge on the matter.

Nevertheless interviews have some very characteristic problems that ought to be recognized. Saunders et al. (2009, p. 326) list three main challenges in data quality with in-depth and semi-structured interviews:

1. Reliability
2. Form of bias
3. Validity and generalization

Reliability and the possibility of interviewee being bias are to a degree related problems. Basically this means the fact that can the interviewer thrust that interviewees are telling the truth and not leaving uncomfortable or personal matters unmentioned. (Saunders et al. 2009, p. 326) To avoid this interviews were promised to be fully confidential and the analysis was made anonymously. To overcome the data reliability challenges, interviews concentrated on actual events. For example enquiring about real cases and situations where a challenges might have come up. Thus making it easier to identify the challenges.

Validity and generalization challenges was addressed by including multiple interviewees from similar areas. By asking same questions from different employees of same group enabled the possibility to generalize the findings and confirm the validity.

The interview questions are presented in appendix A. From the question list it is clear there are four different themes the questions are part of. This kind of interview is called theme interview (Saaranen-Kauppinen & Puusniekka 2006). Theme interview is a semi-structured method and allows freedom for the interviewees with their answers. The benefits is this chosen type of interview is the form of discussion it allows. (Saaranen-Kauppinen & Puusniekka 2006) Business and IT alignment focus in this thesis is on general level and many forms challenges can manifest in the case organization. The possibility for discussion allowed the interviewer to go further into the pain areas of the challenges. Theme interview also allows both qualitative and quantitative analysis of the interview data (Hirsjärvi et al. 2007, p. 203). Through categorization the interview data could quantified which allowed numerical comparison of the empirical data.

3. BUSINESS AND IT ALIGNMENT

The third chapter covers some of the general literature on business and IT alignment. This chapter answers to the two first research problems by defining the term business and IT alignment, but also taking a look at the business and IT alignment relationship to organizations.

3.1 Business and IT alignment definition

To understand what business and IT alignment means, it is first beneficial to define the words IT and business. Both of the words are general concepts that can be seen in many ways. According to Gartner (2015) IT means the following: "*The entire spectrum of technologies for information processing, including software, hardware, communications technologies and related services*". This definition focuses more around the technologies what the word IT covers. Though IT can also be seen to include the processes, sub-organization and people connected to these technologies and services. When combining these two points together, a more fitting definition of IT is the following: the entire spectrum of technologies for information processing, including software, hardware, communications technologies, related services and sub-organizations providing the technologies and services.

Business is even more diverse word than IT. In general business can mean three different things. Business can be an organization engaging in commercial, industrial or professional activity, reference to a specific area of economic activity or the activity itself of any commercial, industrial or professional undertaking. (Investopedia 2015) The latest definition referring to the activity of doing business is the closest one when it comes to understanding the definition of business and IT alignment.

The last part of the term "alignment" can be seen in many ways. Coltman et al. (2015, p. 2) list different variations used in the scientific writings for the word alignment. For example terms like 'matched with', 'in harmony with', 'complement each other', 'fit', 'support' or 'synergy' are used to define or describe the alignment part of business and IT alignment (Coltman et al. 2015). Coltman et al. (2015, p. 2) also highlight that none of the terms really have explicit ways to translate to operational action or measures. This can indicate that alignment can mean many different things based on the context it is viewed from. Looking into the words of the term business and IT alignment helps to understand what it means, but is not enough to understand it in detail. Thus looking into the literature of business and IT alignment and its overall concept is the next step when trying to understand the meaning of the term.

One very simplified concept to describe business and IT alignment is presented in the figure 4. When simplifying business and IT alignment to its core, it basically means the actions and communication between IT and business (Sidhu 2013, p. 21). Even though Sidhu simplifies the term massively, it successfully highlights the two way stream of communication and actions that are argued to be critical in business and IT alignment (Silvius 2009, p. 560).

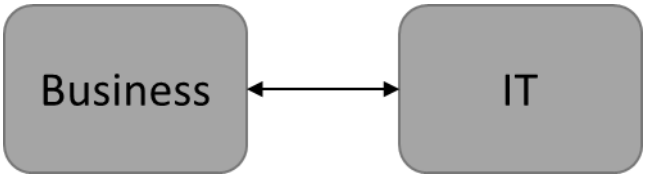

Figure 4. *Basic concept of Business and IT alignment (adopted from Sidhu 2013, p. 21)*

Coltman et al. (2015, p. 5) present major arguments why the business and IT alignment should be seen as a "two way alignment" instead of just IT´s ability to adapt to business. The most weighted being the rising importance of digitalization or digital strategies. Bharadwaj et al. (2013, p. 480) point out that core idea of digital business strategy is to adjust the thinking of IT from an enabler or supporter of business to be more of fundamental driver of business in the form of value creation and capture. For this exact reason Coltman et al. (2015, p. 5) argue that business and IT alignment needs to be have "two way alignment" if the organization wants utilize todays digital options in business. Also Silvius (2009, p. 560) underlines that thinking that IT should just follow business is not up to date, but instead IT should challenge the business. Understanding and remembering that business and IT alignment is a mutual effort seems to be important part of achieving the alignment and the argument is shared across the current scientific discussion (see Coltman et al. 2015; Silvius 2009; Chan and Reich 2007a). Now that both the individual words in the term business and IT alignment and the way they should be understood are explored, it possible to move further and concentrate on the whole term.

The whole term of business and IT alignment has multiple definitions in scientific writings and on top of this the definition are constantly evolving. The definition for business and IT alignment presented in the very first paragraph of this paper is a modern and current way of defining the term. Thus to understand the evolution of the definition, taking a look to some of the earlier descriptions will help. Ullah and Lai (2013, Table IV) have gathered together and explained some of the definitions in their research. Table 2 shows few selected definitions and presents some comments about the evolution of the definitions.

Table 2. *Business and IT alignment definition evolution (adapted from Ullah and Lai 2013, Table IV)*

Author	Concept definition	Comments
Henderson and Venkatraman 1993	Alignment is the degree of fit and integration between business strategy, information technology strategy, business infrastructure, and information technology infrastructure.	- Focus on the structural alignment and strategic fit - Does not highlight cooperation
Broadbent and Weill 1993	The process of alignment between business and IT is the degree to which it is allowed, supported and motivated by information technology strategies.	- Focus on IT and its´ responsibility to adapt to business - Focus on structural alignment
Luftman 2004	Alignment refers to applying IT in an appropriate and timely way, in harmony with business strategies, goals and needs	- Acknowledges that there is different levels of alignment for different need and times - Emphasizes the functional fit inside the organization
Campbell 2005	Alignment is the process where business and IT work together to achieve a common business goal.	- Emphasizes the cooperation of IT and business - Focus on functional alignment - Does not mention need for structural alignment
Silvius 2009	Alignment is the degree to which the IT applications, infrastructure and organization, enable and support the business strategy and processes, as well as the process to realize this.	- Emphasizes the cooperation of IT and business - Takes to account the different levels of alignment - Acknowledges the different dimensions of alignment

When looking at the early definitions of Henderson and Venkatraman (1993) and Broadbent and Weill (1993) there are clear differences between them. When Henderson and Venkatraman (1993) focus on the fact that the business and IT strategy need to align, Broadbent and Weill (1993) point out that structure of IT and business need to support each other. It can be argued say that these definitions do not acknowledge all the dimensions of alignment but only focus on one view of alignment. Also both are to a degree IT focused. When looking at the Luftman´s (2004) definition, it adds the different levels of alignment to the term. This acknowledgement that different types of organizations need to approach alignment differently, highlights that alignment is a set of actions that should aim for efficiency according to the changing environment. Campbell (2005) emphasizes the cooperation or "two way alignment" in the definition, but also fails to take account

the different dimensions or types of alignment. One of the main findings that Campbell (2005, p. 666) presents is that without the cooperation of IT and business, even on the level of informal networks in organization, achieving alignment is difficult.

Silvius (2009) definition of business and IT alignment fits the needs of the thesis the best. The holistic approach highlights the need for different ways to look at the business and IT alignment. Even though different angles have been emphasized in different definitions over the years, putting them together and trying to form an overall picture has not been the target. However the framework introduced by Reynolds and Yetton (2015) with three different approaches to the business and IT alignment, clearly aims to a more holistic evaluation. Silvius (2009) uses words "degree" and "process" in the definition presented in the table 2. These refer to the two ways of seeing business and IT alignment either as a state that should be achieved or as a process that continuously aims to improve the cooperation of IT and business. (Silvius 2009, p. 560) From the standpoint of the thesis, there is no meaningful difference whether alignment is seen as a state or a process. Since the aim is not to explicitly show the maturity of alignment or benchmark it to other organizations, but to instead find alignment challenges in the current situation. In the end the most important goal is understand what challenges the case organization current faces and emphasizing the continuous improvement.

To summarize, business and IT alignment is a term that can be understood in many ways. In this section the term was broken down to the word level so that the meaning of the term would be covered in detail and explained extensively. After the term was explained, the whole definition was looked from multiple different approaches. Over all the most holistic definition suits the needs of the thesis best thus Silvius (2009) definition was the one chosen among the options; *Business and IT alignment is the degree to which the IT applications, infrastructure and organization, enable and support the business strategy and processes, as well as the process to realize this.*

3.2 Importance and benefits of business and IT alignment

In the introduction some critic towards the benefits or importance of business and IT alignment was listed. As mentioned, this list should be seen as examples of the challenges in business and IT alignment, not as arguments that undermine its importance. On the other hand asking the question how relevant business and IT alignment really is, is a valid question. Thus the aim of this chapter is to present some arguments towards the importance of business and IT alignment and show why alignment is a meaningful topic.

One very explicit argument towards the importance of business and IT alignment is seen in the annual survey from 2014 conducted by the Society for Information Management (SIM). SIM is a large community of senior-level IT professional aiming to share the best practices of the IT business (The Society for Information Management 2015). Kappelman et al. (2014) have visualized and explained the results from this annual survey. Table 3

shows the results of top management issues and concern. The survey was send by email to all members of SIM. In the year 2014 they received 1002 responses from different senior IT managers from over 717 organizations from all over the world and from varying businesses. (Kappelman et al. 2014, p. 238) This means the results of the survey are quite extensive and give a good look into the current trends inside the global market and specifically information technology and its management.

Table 3. *Top organizational IT management concerns (adapted from Kappelman et al. 2014, p. 239)*

IT Management Concerns/Issues	2014	2013	2012	2011	2010	2009	2008	2007	Average position
Business and IT alignment	1	1	2	1	3	2	1	2	2
Security / privacy	2	7	9	8	9	9	8	6	7
Business agility / flexibility	3	2	3	2	2	3	13	17	6
Business productivity	4	3	1	4	1	1	7	4	3

From the table 3 it easy to see that business and IT management is and has been a top concern and point of focus for many years. In fact business and IT alignment has been ranked as No. 1 eight times during the years 2002-2014 (Kappelman et al. 2014, p. 239). It seems that business and IT alignment is an important target for many firms and also continues to be a constant area for improvement. Beside this Kappelman et al. (2014, p. 238) theorize that ever changing environment causes business and IT alignment to be a continuous goal and thus a constant point of interests. According to recent academic survey, the changing operational environment and the need to align business to it, is the number one reason for IT transformation inside organizations (Sidhu and Gupta 2015, p 2297). The changing environment can explain the constant emphasizes on business and IT alignment, but what it does not explain is why one should aim for the alignment. To understand why business and IT alignment seems to be a relevant and constant topic, investigating the benefits of business and IT alignment will help. In the following paragraphs some of the benefits identified in scientific writings are reviewed shortly.

Financial gain is one identified benefit of business and IT alignment. Gerow et al. (2014) have conducted a study explaining the link between different kinds of alignment and the financial gain or profitability of an organization. The study gives a good understanding from what factors does the financial gain come from and what are not important. The study was conducted as a survey to 140 business executives. Gerow et al. (2014, p. 8) defined four types of alignment; intellectual alignment, operational alignment, business alignment and IT alignment. Business alignment refers to business strategy alignment with the business operations. Operational alignment refers to alignment between business

operations and IT infrastructure. Intellectual alignment refers the alignment between business and IT strategy and last the IT alignment refers to IT strategy alignment with IT infrastructure. (Gerow et al. 2014, p. 8) When combining these types of alignment with the evaluation of financial gain, a deeper understanding from the different components and relationships becomes possible. These components and relationships are presented in the figure 5.

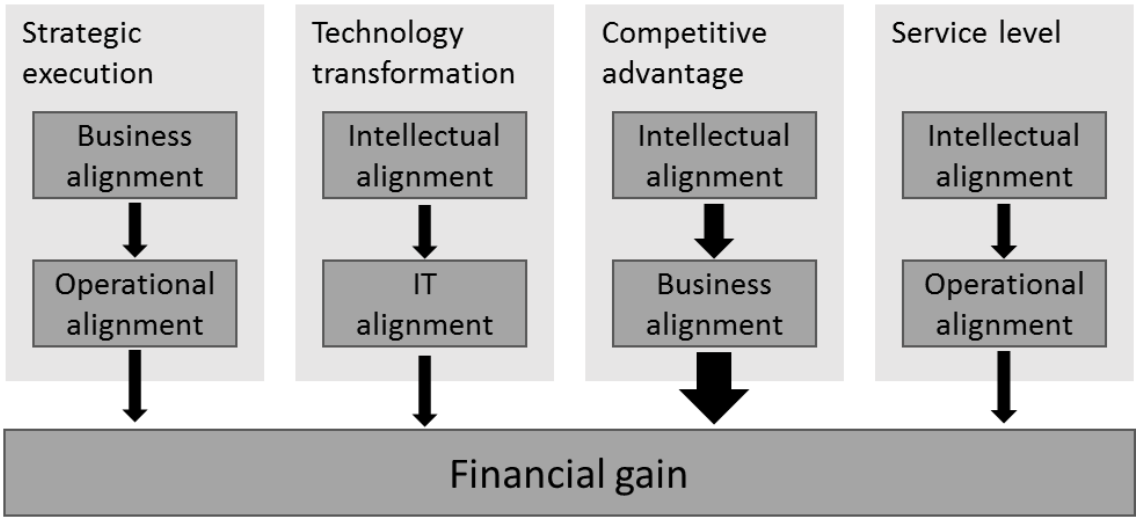

Figure 5. *Financial gain effect of business and IT alignment (adapted from Gerow et al. 2014, pp.11-13)*

To further understand the creation of financial gain though business and IT alignment, the study by Gerow et al. (2014) focused in four dominant alignment perspectives from SAM by Henderson and Venkatraman (1999); strategic execution, technology transformation, competitive potential and service level. The findings showed that all of the mentioned perspectives have positive correlation to financial gain of an organization. The first perspective is good example on these perspectives and the value chain behind them. The strategic execution perspective starts from good business alignment that then effects operational alignment. This can lead to better performance and better strategic focus, which will manifest as financial gain for the organization.

The study found that the most important from the four perspectives is the competitive potential. This means through proper intellectual alignment organization can improve business alignment, which according to the study leads to increased potential financial benefits. (Gerow et al. 2014, pp. 8-11) This is understandable. For example the balance that intellectual alignment should provide between business and IT strategy can manifest itself though business alignment with new more efficient ways of working and thus increase performance. The least financial gain potential was found in the technology transformation perspective (Gerow et al. 2014, p. 11). Even though research itself did not present specific reasons for what is the reason behind this, one can argue that activities related to technology transformation usually come with cost. Thus part of the financial gain

is most likely drained by the investment costs. Nevertheless Gerow et al. (2014) academically found clear correlation between proper business and IT alignment and financial gain in organizations.

As pointed out, the main financial benefits from business and IT alignment comes from better performance and competitive potential it can enable for organizations. Thus the focus of archiving business and IT alignment should be aimed for actions that can have the largest impact for performance and competitive advantage. Additionally Gerow et al. (2014) found that these activities seem to be so called cross-domain activities inside organizations. For example how to align their IT infrastructure to their business strategic needs. This means to not just focus on certain areas of organization, but instead take a broader more holistic approach to any development and change.

Gerow et al. (2014) focused on organizational performance but there are also examples when well thought out business and IT alignment that can impact the whole industry. Chan and Reich (2007a, p. 307) point out cases like the American Airlines SABRE reservation system or the Bank of America's ERMA automatic cheque processing system. These are both systems that revolutionized the whole industry when they were first introduced. These are examples of innovations that in the Gerow et al. (2014) model have emerged from the competitive potential perspective, but have had much larger industry changing effects. The possibility for industry wide change could also explains why competitive advantage perspective had the biggest correlation to financial gain in Gerow et al. (2015) study.

Beside the financial gain or competitive advantage, flexibility or agility is one identified advantage of business and IT alignment. Chen (2008) makes one example of the flexibility that business and IT alignment can bring in the article "*Towards Service Engineering: Service Orientation and Business-IT Alignment"*. Chen (2008) points out how services can be built to be more flexible and reactive to the customer needs and new innovations with the help of business and IT alignment. In the article, Chen (2008) takes a more holistic look to service oriented architecture (SOA) from business and IT alignment angle and highlights some of the benefits that business and IT alignment bring to it. SOA is a way or mind set to see IT service and software architecture and in itself does not have clear connections to business and IT alignment.

Chen (2008, p 2) argues that even though implementing SOA to an organization has positive effect to the service delivery, SOA alone is not enough. In SOA, organization tries to increase the value for customers while reducing internal costs and increase flexibility through service oriented mindset in the organizations way of working. The SOA approach requires a lot of understanding across the different levels of organization. Chen (2008, p 2) points out that the business and IT alignment can help solve this problem. Figure 6 simplifies the Chen´s idea of enchasing SOA with business and IT alignment ideas.

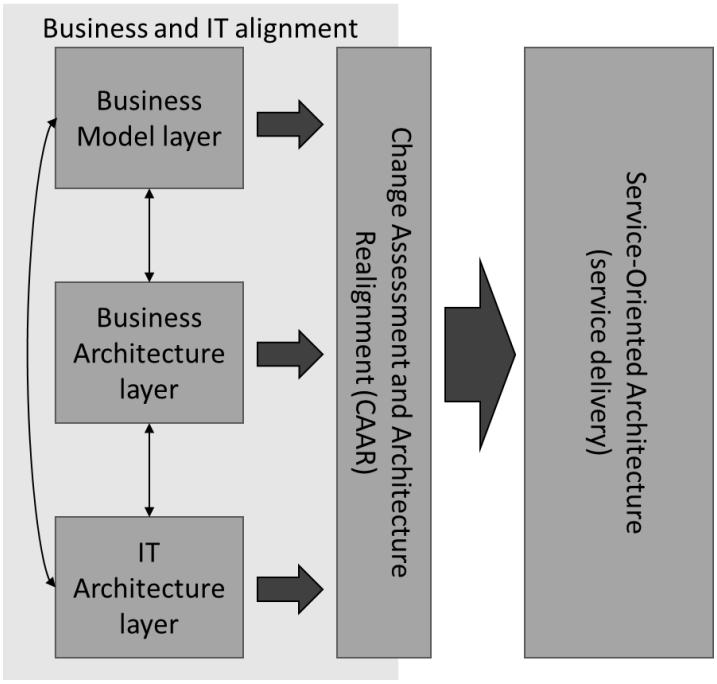

Figure 6. *SOA enhanced with business and IT alignment ideas (Adopted from Chen 2008)*

The most interesting idea of Chen´s (2008) model is the Change Assessment Architecture Realignment (CAAR) module. This module aims to enhance the SOA by making sure the feasibility of a new services or changes as early into delivery process as possible, by providing a forum (CAAR) that can take a holistic look into the idea from all alignment levels. This way organization can take the most benefits of its existing resources and also enable personnel to focus on their core competence (Chen 2008, p. 8-9). For example with CAAR module, a service owner can go to the forum and get accurate evolution of a new idea without the need for a service owner to know about all of the dependencies. Therefore Chen (2008) argues the model enables the potential in SOA with more agility and with strategic precision (Chen 2008, p. 9).

Chen (2008) introduced basically one potential way of how to use business and IT alignment to increase flexibility in an organization. Though CAAR is just a framework and did not have any empirical study to explain it in reality, taking a look to one more empirically proven example will provide more insight to the possible flexibility benefits of business and IT alignment. One study like this is the Bradley et al. (2012) research on the business and IT alignment in US hospitals. In the study, Bradley et al. (2012) investigated how enterprise architecture affects to enterprise agility in US based hospitals. They conducted a survey for 1000 CIOs and received 164 usable responses. The results revealed how significant business and IT alignment really is to the agility of an organization. In the study they measured the correlation of enterprise architecture to enterprise agility. Figure 7 shows the results of the study.

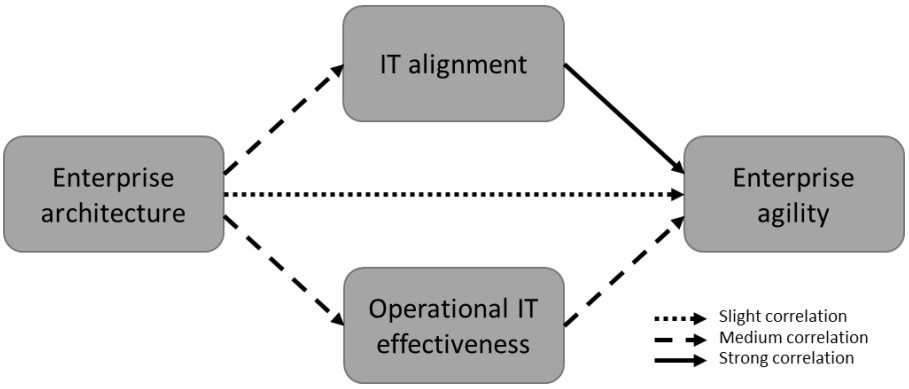

Figure 7. *Enterprise architecture effects to enterprise agility (Adapted from Bradley et al. 2008, p. 115)*

What can be seen from the results, is that the most significant correlation lies between IT alignment and enterprise agility. Bradley et al. (2008) found out that IT alignment is a significant mediator of the benefits that lead to agility and alone enterprise architecture cannot produce significant benefits to agility of organization. Even though the study did not focus only on the correlation of business and IT alignment and the organizations agility or flexibility, it highlighted and explicitly showed that business and IT alignment has a strong mediator role in the increasing agility. Thus this case is a good example of the business and IT alignment´s flexibility and agility benefits.

Both the theoretical example of the service flexibility potential in business and IT alignment (Chen 2008) and the empirical study of business and IT alignment's affects as a mediator to enterprise agility (Bradley et al. 2008), highlight that business and IT alignment seems to be an enabler of improvement. This mediator or enabler attribute of business and IT alignment is also visible in the financial gain case example by Gerow et al. (2014). From all of the studies it is clear that alone IT internal activities cannot produce significant financial gain or benefits, but when IT and business activities are used together they can produce clear financial gain potential and flexibility (Bradley et al. 2008, Chen 2008, Gerow et al. 2014). The competitive potential perspective was the strongest among the perspectives in the study by Gerow et al. (2014) but also the service level perspective had a correlation to financial gain. The service level perspective looks into the potential in aligning IT solutions with operational activities and the Gerow et al. (2014) study found out that 9.3% firm financial performance was connected to this perspective. Mainly by enabling more flexible services (see figure 5; Operational alignment) to the customers with aligned IT solutions (see figure 5; IT alignment). This is yet another example of the mediator benefits of business and IT alignment.

Another example of the improvement enabler attribute of business and IT alignment is within a current topic of digitalization or digital business strategy. Digital business strategy means the activity of creating new value to business through active integration of business and IT. It does not mean that the current business activities should be digitalized, but that one actually builds better ways of business with or through IT. (Ministry of Employment and the Economy 2015) Bharadwaj et al. (2013, p. 472) emphasize that a major

enabler of digitalization is a proper business and IT alignment. All the benefits explained and argued in this paragraph in away answer to the question and explain why business and IT executives constantly vote business and IT alignment as a top concern in the SIM survey.

The goal of this paragraph was to broadly examine why business and IT alignment is important for any organization but also explain the reason behind the different factors. Four main points were addressed in the paragraph; high raking amount IT executives focus areas, the potential financial gain, flexibility increase and the enabler nature of business and IT alignment. These points should serve as enough of proof that business and IT alignment is indeed important and should be recognized in any organization.

3.3 Business and IT alignment enablers and inhibitors

As previously noted business and IT alignment remains to be an important topic in IT management and there are identified benefits of pursuing business and IT alignment. The next interesting questions is; what are the needed elements to achieve sufficient business and IT alignment? One of the most cited papers that addresses this topic is Luftman et al. (1999) paper "Enablers and inhibitors of business-IT alignment" as it has nearly 500 recorded citations at the time of the writing of this thesis (Google Scholar 2015b). In this paper Luftman et al. (1999) analyze finding from their extensive study conducted in large, Fortune 500, companies. Table 4 shows the six most important enablers and inhibitors of business and IT alignment identified in the study.

Table 4. *Business and IT alignment enablers and inhibitors(Adopted from Luftman et al. 1999, p. 16)*

Luftman et al. (1999) survey study results	
Enablers	**Inhibitors**
1. Senior executive support for IT	1. IT/business lack close relationships
2. IT involved in strategy development	2. IT does not prioritize well
3. IT understands the business	3. IT fails to meet its commitments
4. Business - IT partnership	4. IT does not understand business
5. Well-prioritized IT projects	5. Senior executives do not support IT
6. IT demonstrates leadership	6. IT management lacks leadership

What is interesting, is that these findings appear to be relevant. Rozendal et al. (2015) conducted a case study in public utility service corporation in The Netherlands to find out what business and IT alignment areas positive correlations towards organizational change and what server as inhibitors. The results are listed in the table 5. The results seems to have some similarities in their findings for example Luftman et al. (1999) list *Business - IT partnership* and Rozendal et al. (2015) have *Positive Collaborative Experience* in their results. Thus it is beneficial and foremost interesting to examine the business and IT alignment enablers and inhibitors closer by combining both of the sources. The survey study

by Luftman et al. (1999) provides a holistic view and the case study by Rozendal et al. (2015) enables mirroring these holistic point to a more practical level. A third point of view from a recent survey by Sidhu and Gupta (2015) is also added to the review. Their survey is a regionally scoped study of business and IT success factors in Indian and can be used to highlight the most important factors from Rozendal et al. (2015) and Luftman et al. (1999) findings.

Table 5. *Business and IT alignment factors enabling or inhibiting organizational change (Adopted from Rozendal et al. 2015, p. 7)*

Rozendal et al. (2015) case study results	
Enablers	**Inhibitors**
1. Clear Assessment Criteria	1. Empire Building
2. Information Exchange	2. Misguided Technological Expectations
3. Managerial Role Model	3. Differences in Professional Language
4. Involvement and Participation	4. Lack of Open Communication Climate
5. Positive Collaborative Experience	

Luftman et al. (1999) starts with listing *senior executive support for IT* as an important enabler for proper business and IT alignment. Top management mandate was identified as the most important enabler in the survey by Sidhu and Gupta (2015). Organizations executive team needs recognize the value of IT for the organization and define the role of IT in the organization (Luftman et al. 1999). The second enabler in the table 4 *IT involved in strategy development* is connected to the first enabler. While the first enabler highlights the need for non-IT executives to understand and support IT, also IT has to be included in the strategical development. IT needs to understand the business needs and the role of IT needs to be defined, but this activity should be a collaboration of both IT and business. (Luftman et al. 1999, p. 16-18) Rozendal et al. (2015) have identified similar points in their case study. In the table 5 *Clear Assessment Criteria* means the need for definition of roles on both IT and business sides. (Rozendal et al. 2015, p 8) In other words, what does the business really want and what can and should IT really provide. Even though the case study by Rozendal et al. (2015) has more practical approach than the survey study by Luftman et al. (1999), where the result are more holistic, the need for clear and shared view on roles and responsibilities is visible in both cases. The need for clear strategic targets and responsibilities was found to be the third most important success factor in the survey study of Sidhu and Gupta (2015).

The third and fourth enablers in the table 4 refer to already addressed two way stream of business and IT. The partnership and understanding of others needs and possibilities is ranked high as an enabler of business and IT alignment. IT needs to understand the business and business needs to understand the potential of IT. This enables the effective use of the technical potential of IT and the business opportunities this may bring. (Luftman et al. 1999, p. 18-19) In more practical level similar points were listed in the case study by Rozendal et al. (2015). Both IT and business need to be communicating and sharing

knowledge between each other (Rozendal et al. 2015, p 8). This communication needs to be done in a way everyone can understand it, which means IT should communicate with terms familiar to the business. (Luftman et al. 1999, p. 18). For this reason *Information Exchange* is the second on the table 5. The need for proper communication forums and practices is further emphasized by Sidhu and Gupta (2015) as they found it to be the second most important success factor in business and IT alignment.

The fourth point in the table 5 is similar, but slightly closer to practical level in an organization. Rozendal et al. (2015) found out that there needs to be opportunities and processes that enable the knowledge transfer and cooperation. Employees should be involved and participating to the discussion so that information flows between all parties (Rozendal et al. 2015, p 8) Similar point was highlighted in the Sidhu and Gupta (2015) survey as the fifth most important success factor was listed as healthy user-IT relationship. As the top management and strategic are on top of the lists, (Luftman et al. 1999, Rozendal et al. 2015 and Sidhu and Gupta 2015) when it comes to enabling business and IT alignment. Still it is good to remember that eventually the cooperation has to realize at the user and employee level.

The fifth point in the table 4 focuses on correctly prioritized IT projects. The reasoning behind this enabler is the need to be the first or among the early adapters to achieve the advantage from IT compared to the competitors (Luftman et al. 1999, p. 20). Without this enabler, realizing the benefits from business and IT alignment can be hard in practice. The sixth enabler listed in the table 4 is also related to the competitive advantage. If IT has the potential to lead, organization could potentially profit from the early adapter benefits (Luftman et al. 1999, p. 20). Sidhu and Gupta (2015) also found that proactive IT department was seen as the fourth most important success factor in business and IT alignment. Even though business and IT alignment ought to be two-way stream, it seems IT has the bigger role in it. IT is definitely the younger part and thus IT needs to prove its usefulness and share the useful knowledge more actively.

On the other hand Rozendal et al. (2015) highlight the importance of managers on both business and IT sides. Managers have to show positive example and lead the cooperation between and cross the departments of organizations. Managers are also in a critical role of ensuring right projects go forwards inside the organization. (Rozendal et al. 2015, p. 9) With the Rozendal et al. (2015) point of highlighting the importance of managerial role now all the levels of organization have been identified to have a critical role in business and IT alignment. This again shows the need for broad perspective in the analysis.

The inhibitors on both the survey and case study are mainly the opposites of the enablers. Also the next paragraph focuses on the challenges of achieving proper business and IT alignment. Thus there is no need to examine the inhibitors in more detail than the tables already provide. The exception being the first inhibitor listed in the case study, which lacks a counterpart enabler. The fact that, IT and business naturally lack close relationship

or are isolated in their own domains, which in the survey study is referred as *Empire building*. Rozendal et al. (2015, p. 11) explain the challenge as the natural unwillingness to go beyond one's own responsibilities and that people always tend think to their own benefits. Thus the benefits of the organization are always less like to be realized if departments or parts of the organization are not close enough or do not understand each other in enough of detail. (Rozendal et al. 2015, p. 11) From the survey of Sidhu and Gupta (2015) a similar point was expressed but this included the role of external partners and more specifically the interface to them. This factor was not at the top five success factors of the study but was seen as quite important factor according to survey. Much like empire building inefficient partner interfaces can be seen to harm business and IT alignment. Organizational changes can help with this (Rozendal et al. 2015). For example matrix or business area determined organization charts, which bring business closer to IT, might be a solution to this inhibitor.

There are some clear similarities in both the older survey study by Luftman et al. (1999) and the more recent case study by Rozendal et al. (2015). In addition the findings from a recent survey by Sidhu and Gupta (2015) highlight similar success factors to business and IT alignment. Communication and cooperation topics seems to be important enablers of business and IT alignment. On the other hand an organization has to be setup in a way that can help and facilitate business and IT alignment activities. It seems that some factors can be seen as timeless and there are reacquiring questions that each organization ought to find an answer for.

3.4 Business and IT alignment challenges

The Luftman et al. (1999) made their study of the enablers and inhibitors at end of last century. Around that time IT and business alignment was a newer topic, but since then it has been argued that IT and business alignment should already be common knowledge in the modern organizations (Chan and Reich 2007a). Yet it remains a top concern of executives around the world (Kappelman et al. 2014). One explanation to this is that achieving business and IT alignment is a timeless and evolving challenge with ever changing obstacles. To understand this side of business and IT alignment it is good to have a look at the challenges academic literature has identified.

To explain the challenges related to business and IT alignment, it is beneficial to use a source with a broader view of the problem and then more case oriented approach. For this purpose the literature review of Ullah and Lai (2013) and the case study of Alaceva and Rusu (2014) were select as the base sources to look into challenges in business and IT alignment. Ullah and Lai (2013) have gathered some known challenges from the business and IT literature to same source. Whereas Alaceva and Rusu (2014) research is a case study of business and IT alignment challenges. This ought to provide a sufficient framework to present challenges in business and IT alignment. Other literature source are cited to support the findings from these two researches. The challenges are divided in to four

categories; strategy and communication, competence, roles and authority and environment change. There categorize are similar but not same what Ullah and Lai (2013) used in their paper.

Strategy and communication is a traditional focus point on IT and business alignment. For example this area is the main focus of models like SAM. Henderson and Venkatraman (1999, p.472) argue that strategic alignment is the core or foundation of the cooperation of business and IT. Table 6 shows some of the challenges related to strategy and communication. To better understand the challenges, some of them ought to be examined in more detail. Unclear business strategy is a challenge that makes the two way communication between business and IT harder. Without clear goals it is arguable harder for managers to adapt to business changes and make aligned IT decision (Ullah and Lai 2013, Rathnam et al. 2005). In many cases no common planning between the business and IT also causes challenges. Without any overlapping strategical planning the forming of silos will only be intensified. The next identified challenges is lack of formal networks, which is required for successful business and IT alignment. Information has to be shared in order the alignment to be on a sufficient level (Alaceva and Rusu 2014). Alaceva and Rusu (2014) only mention the top level communication, but these formal network have to exist on lower organization levels as well (Rathnam et al. 2005, Luftman and Ben-Zvi 2010). Lack of communication on lower levels will make it harder to execute the business and IT alignment activities identified on the top level (Rathnam et al. 2005).

The last challenge listed in the table 6 highlights that the terms and language used in both business and IT differ vastly. This can cause misunderstandings and lead to wrong decisions as the context or effects of a changes are not completely understood. (Ullah and Lai 2013, Alaceva and Rusu 2014) Luftman and Ben-Zvi (2010) list this as one of the reason why business and IT alignment is constant issue in the eyes of IT executives. The so called “IT buzz” words make it hard even IT personnel to understand what issues needs addressing. Many executives see that the IT-business communication is the highest priority action to better business and IT alignment. (Luftman and Ben-Zvi 2010) The majority of challenges listed in the strategy and communication category point to IT and business working together and without this the organization is pound to become less effective (Alaceva and Rusu 2014).

Table 6. *Strategy and communication challenges in business and IT alignment (Adopted from Ullah and Lai 2013 Table II and Alaceva and Rusu 2014 p. 10)*

Strategy and communication		
Challenge	**Description**	**Source**
Unclear business strategy	It is hard for managers to adapt, if the business strategy is unknown or not clear	Ullah and Lai (2013)
No common strategic planning	Strategy planning process or communication does not overlap	Alaceva and Rusu (2014)
Lack of formal networks	Lack of frequent, direct, formal meetings for IT and business executives to share information	Alaceva and Rusu (2014)
Domain knowledge or "communication cap"	Business and IT not sharing their domain knowledge. By sharing domain knowledge, the communication gap between the two groups is reduced and alignment level is high.	Ullah and Lai (2013), Alaceva and Rusu (2014)
Sense of mistrust and lack of openness	All parties need to be able to share concerns, opinions and thoughts openly	Alaceva and Rusu (2014)
Business takes the decisions apart	Business makes IT decision without IT.	Alaceva and Rusu (2014)
Business and IT cannot communicate	Business and IT lack the tools and culture to communicate	Alaceva and Rusu (2014)
Different languages	IT and business do not share the same language and have own terms	Ullah and Lai (2013), Alaceva and Rusu (2014)

Competence challenges, that in this context mean the shortage of know-how of the personnel, can also make the business and IT alignment harder to accomplish. Table 7 lists identified challenges related to competence. Some of them overlap with the challenges in table 6, as for example low level of understanding of counterpart´s environment. This challenge can manifest due to lack of formal networks and shared domains of knowledge. This can even lead to a negative loop as insufficient knowledge of each other environment is an identified inhibitor of communication between business and IT (El-Mekawy et al. 2015). Poor outsourcing activities can be a reason to of entering this negative loop as the distance to business increases, which can lead to fading knowledge (Alaceva and Rusu 2014). In addition to fading knowledge outsourcing can lead to lower flexibility if the contracts are not flexible enough (El-Mekawy et al. 2015).

Alaceva and Rusu (2014, p. 10) highlight that poor leadership skills in IT management can make business to seek the help they need from other sources like external vendors or start building their own systems. IT leadership have to be able to show and demonstrate the value of IT to the business (El-Mekawy et al. 2015). Lack of IT alignment awareness challenges is related to demonstration of IT value. Many business executives still see IT only as a cost (El-Mekawy et al. 2015). Successful IT projects are a key part on building alignment though IT cannot be successful on its own and business does need to be realistic

and open towards IT (Alaceva and Rusu 2014). Thus there is need for clear specification. With realistic goals and common understanding, successful implementation is possible without it both parties will be affected negatively (Alaceva and Rusu 2014). These are some examples of competence related challenges that companies struggle with.

Table 7. *Competence related challenges in business and IT alignment (Adopted from Ullah and Lai 2013 Table II and Alaceva and Rusu 2014 p. 10)*

Competence Challenge	Description	Source
IT management lacks leadership	IT management need as strong leaders as business has	Alaceva and Rusu (2014)
Outsourcing strategy	Poor outsourcing might result in the fading of internal knowledge	Alaceva and Rusu (2014)
Unclear specifications	Both IT and business need be able manage their expectations of other party on a realistic level	Alaceva and Rusu (2014)
Lack of IT alignment awareness	Most business executives are unaware of the importance of IT alignment and they do not believe that IT alignment can solve business problems.	Ullah and Lai (2013), Alaceva and Rusu (2014)
Low level of understanding counterpart's environment	Without transparency both parties will not have proper level of understanding others environments.	Ullah and Lai (2013), Alaceva and Rusu (2014)

Successful cooperation needs clear rules and responsibilities. Table 8 lists some of the challenges related to roles and authority. In the table 8 Ullah and Lai (2013) list two similar points in their summary of challenges regarding authority; business managers making IT decisions and ignoring IT in business decisions. These two challenges highlight the need to involve or consult IT more when it comes to business decisions especially, when IT components are involved. This is definitely a challenge worth mentioning as IT is ever more important part of business for example through digitalization (Bharadwaj et al. 2013). Alaceva and Rusu (2014, p. 9) point out though that also IT needs actively take the role of leading the change. IT cannot just be viewed as a support function, but instead should be view as enabling and development driving partner for business (El-Mekawy et al. 2015).

The fourth and fifth challenges listed on the table 8 are both connected to sharing and understanding responsibilities. Having different or individual metrics of success leads to all parties trying to have their results to be positive, regardless of the other parties' connections to the aspect that are measured. Developing an ultimate metric is most likely not the answer instead clearer roles, better communication and information sharing could resolve this challenges. (Alaceva and Rusu 2014, El-Mekawy et al. 2015) The final challenge in table 8 highlights the need for clear roles and responsibilities. Alaceva and Rusu (2014, p. 11) point out few problems like, the wrong people making decisions and difficulties on communicating or cooperation as you cannot be sure if one is contacting the

right persons for the matter in questions. Some of the challenges regarding roles and authority are connected to communication, though the point of view is different. There is also the possibility that some of the challenges in roles and authority category are the root causes to the visible communication problems in an organization.

Table 8. *Role related challenges in business and IT alignment (Adopted from Ullah and Lai 2013 Table II and Alaceva and Rusu 2014 p. 10)*

Roles and authority		
Challenge	**Description**	**Source**
Manager decision	Business managers use their own understanding to fix business problems.	Ullah and Lai (2013)
IT position	Ignoring IT in business decisions causes miscommunication in the organization and negatively affects alignment.	Ullah and Lai (2013)
Lack of confidence in IT	IT needs to have the confidence to even lead the development if needed	Alaceva and Rusu (2014)
Different metrics and targets	Differing metric will lead to different views of "success"	Alaceva and Rusu (2014)
Unclear roles	Roles and responsibilities need to be clear and shared	Alaceva and Rusu (2014)

The fourth and final group of challenges highlight the effects of different and constantly changing environment. Table 9 has some examples of these kind of challenges. The first and the second challenges highlight environment problems related to the role of IT. In many companies business drives the change and IT must be able to react to it. This reaction time between change in business and the time it takes for IT to catch up to it is the so called *"time cap"*. (Alaceva and Rusu 2014, Ullah and Lai 2013) Alaceva and Rusu (2014) argue that the challenges are related to the limited time IT and business have to learn each other's environments in the hectic business environment, are present in many organizations. With the time component added to the natural environmental changes proper communication, strategic alignment and cooperation come ever more important. (Alaceva and Rusu 2014) Thus whatever alignment process exist it should aim to align IT and business to each other and not just one to another (Luftman and Ben-Zvi 2010).

Table 9. *Environment related challenges in business and IT alignment (Adopted from Ullah and Lai 2013 Table II and Alaceva and Rusu 2014 p. 10)*

Environment Challenge	Description	Source
Frequent change in business	Businesses change their goals frequently, but IT cannot.	Ullah and Lai (2013)
Time gap	Businesses require less time to move to another goal but IT requires more time to support the new goal.	Ullah and Lai (2013), Alaceva and Rusu (2014)
Business and IT infrastructure	The rapid change in business and IT infrastructure requires continual improvement in the alignment process.	Ullah and Lai (2013)
Structure and culture	There is a huge structural and cultural difference between both fields.	Ullah and Lai (2013), Alaceva and Rusu (2014)
High requirements and old legacy	Poor alignment might due to challenges old environments and their limitation bring.	Alaceva and Rusu (2014)

The forth challenge in the table 9 highlights the need for this back and forth communication (Ullah and Lai 2013). The cultural difference cannot be overcome without communication. The fifth and last challenges in the table 8 identified by Alaceva and Rusu (2014) point to the problem caused by old legacy systems. This is a problem IT struggles with but is rises from the business needs. At the same time business might want a flexible fast environment and yet have it to be compatible with old legacy systems and process. (Alaceva and Rusu 2014, p.8) This is a paradox that can prove to be hard to resolve, but is a challenge that many organizations definitely face. For example in Finland the law obligates companies to keep some of the financial data for 10 years, which in the IT world is an extensive period of time (Kirjanpitolaki 1997). With the modern IT, it is arguably possible to create environments that can scale or change fast for example cloud services and pay as you use models, but the factors humans bring still remain part of the equation.

As summary the challenges in business and IT alignment concern wide areas of business and its operations. This chapter used challenges identified from two individual researches to explain the possible problem areas. Ullah and Lai (2013) study was a collection of known challenges from the literature and Alaceva and Rusu (2014) paper was a case example focusing on the social challenges in business and IT alignment in a case organization. As the aim is not to have a complete list of every challenge in business and IT alignment, but rather to form a picture of how insufficient business and IT alignment can effect an organization, this listing of challenges is sufficient.

4. BUSINESS AND IT ALIGNMENT MODELS

Chapter four answers the third research problem of what is the multi model approach to business and IT alignment. The three dimension and one selected model from each dimension is explained in this chapter. These theoretical frameworks can then be relied on in the empirical part of the thesis. The chapter 4.5 summarizes the multi model approach theory utilization from the point of view of this thesis.

4.1 Multi model approach

In the introduction, some of the critics and future research agendas of business and IT alignment were covered. As it was explained, business and IT alignment is a fairly mature field of research when it comes to utilizing IT in organizations and their management. Nevertheless there has been an identified need for newer models and approaches to the topic. (see. e.g. Coltman et al. 2015, Chan and Reich 2007a) Problems such as the process view to alignment, continuous improvement of alignment, multi-business organizations (MBOs), assessment maturity of business and IT alignment or different types of alignment have been answered individually. Combining these point of views together to get a holistic view of the topic is a newer approach for business and IT alignment research. (Coltman et al. 2015, p. 4) Reynolds and Yetton (2015) concept aims to answer some of these needs. Reynolds and Yetton (2015) have not named their model because from their paper it could be interpreted as a view to the business and IT alignment rather than a clear model or method of analysis like for example SAM. In this thesis Reynolds and Yetton (2015) model is referred as multi model approach to business and IT alignment. The concept was first introduced on conference research paper in 2013 (Reynolds and Yetton 2013), but was also later released as a research article in 2015 with small additions and case study (Reynolds and Yetton 2015). Their model can in theory be applied to multiple types of organizations and takes multi-level and cross-level approaches to business and IT alignment. This chapter focuses on understanding the concept so that it can be applied to the case organization.

Reynolds and Yetton (2015) paper is titled “Aligning business and IT strategies in multi-business organizations” and they focus on answering an identified short coming of many earlier concepts of when organizations have multiple strategic business units (SBUs). These kind of organizations are referred as multi-business organizations (MBO). Beside this Reynolds and Yetton (2015) are taking into account the different levels or types alignment by categorizing business and IT alignment into three concepts; functional alignment, structural alignment and dynamical or temporal alignment. With this kind of approach to business and IT alignment Reynolds and Yetton (2015, p. 112) argue holds real value to the analysis of the topic. This view was also shared in a case study using this concept in

their analysis (Pekkola and Nieminen 2015, p 12). The case organization in this thesis is multi-business organization which is described in more detail in the chapter 5.1. In addition, as there was no clear problem area given to focus on, a modern holistic model like the multi model approach is fitting model to use for the analysis of business and IT alignment.

To understand the benefits the multi model approach it is necessary to explain the three types of alignment; functional alignment, structural alignment and dynamical alignment. All these types are in a way different views to the same topic of business and IT alignment that ca also be referred as the three dimension of alignment. Functional alignment is the horizontal alignment in organizations (see e.g. Reynolds and Yetton 2015, p 103 or Kathuria et al. 2007, p. 508). This means the fit between and across the organizations´ strategies and structures (Pekkola and Nieminen 2015, p 2). Structural alignment can been seen as the vertical alignment in organizations (see e.g. Reynolds and Yetton 2015, p 104 or Kathuria et al. 2007, p. 507). Referring to the fit between organization wide goals and strategies to the organizations infrastructure, policies and practices (Pekkola and Nieminen 2015, p 2). The third dimension, dynamical alignment, can be seen as the time dimension. Dynamical alignment can be simplified to mean the organization´s ability to sustain or apply alignment through time and changes. (Pekkola and Nieminen 2015, p 3) The figure 8 illustrates the different approaches of these three alignment categories.

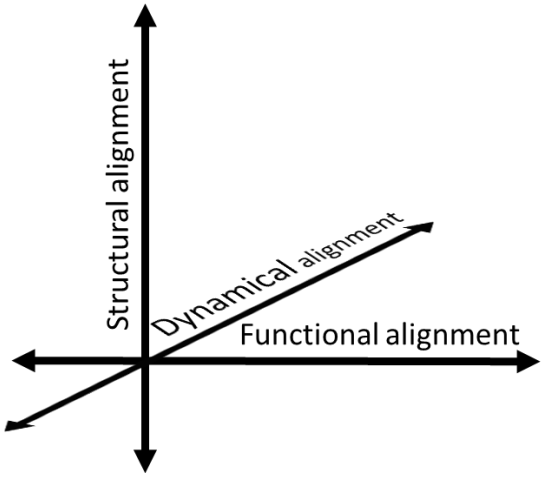

Figure 8. *Three dimension of business and IT alignment*

For each of the dimensions of alignment, there are multiple models and analysis methods that can make it easier to understand that specific type of alignment. In this thesis same models are selected as the main analysis methods for each dimension as Pekkola and Nieminen (2015) did in their case paper. The models are also listed as possible sources for the dimensions by Reynolds and Yetton (2015, p 104). These frameworks serve as the base of analysis in the empirical study. For functional alignment SAM model is used as the framework for analysis. SAM divides organizations to for domains; business strategy, IT strategy, organizational structure and IT infrastructure, and analyses the alignment between these domains (Henderson and Venkatraman 1993, p. 476). References to these

domains can also be seen in the figure 9; corporate strategy, IT platform strategy, SBU strategies and SBU IT portfolio strategy. Structural alignment assessment is based on Broadbent's and Weill's (1993) structural alignment model. This model introduces 15 propositions that can used as checklist for assessing structural alignment. Finally for dynamical alignment Sabherwal et al. (2001) punctuated equilibrium model is used to gain understanding of the temporal capabilities of the case organization. Sabherwal et al. (2001) model analyses the degree of change and the effects it should have had to other domains of an organization. Each of these models take a detailed look into the specific dimension. While using these models together the analysis might not be as in-depth for each dimension, as each model could individually provide. Yet the holistic view acquired with combining the three models should be more beneficial for the case organization. To further aid the utilization of the models each of them share the same four domains originally used in the SAM. Same domains help the analysis of the interview material in the empirical part of the thesis.

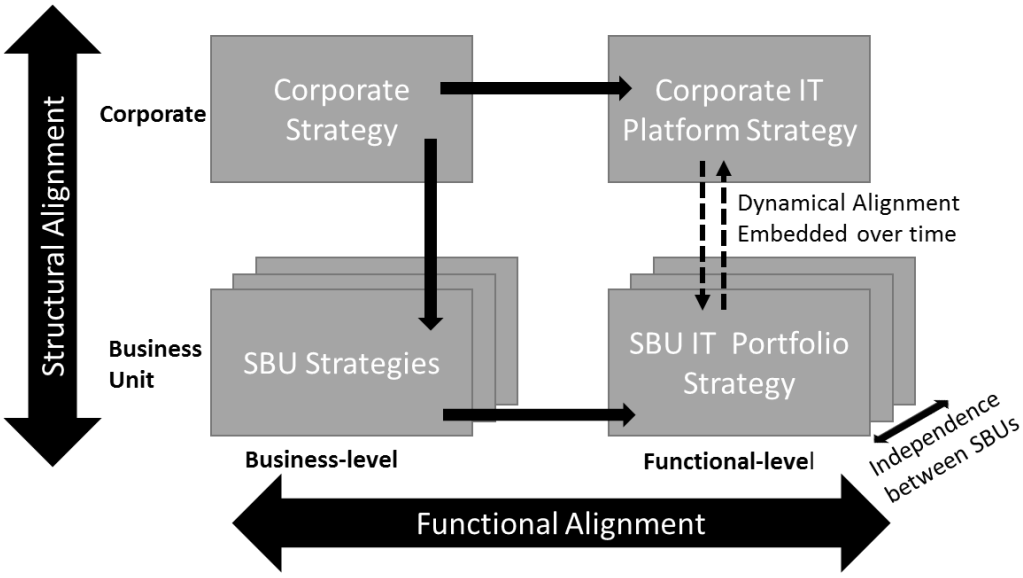

Figure 9. *Business and IT alignment dimension in MBOs (Adapted from Reynolds and Yetton 2013. p. 9)*

The multi-model approach to the business and IT alignment aims to ensure that enough of the important factors in business and IT alignment are taken into account in the analysis. At the same time acknowledging the fact that organizations can have multiple sub businesses. The figure 9 is a great illustration how the model takes into account the different levels organizations have and how these can be viewed from different perspectives. Functional alignment scope is the fit between business and IT activities. Structural alignment focus on assessing the fit between strategies and execution and dynamical alignment evaluates organizations abilities to handle change. This is the holistic approach to business and IT alignment that is mentioned in the introduction. To implement the concept of functional, structural and dynamical alignment to the case organization, the dimension and chosen models need to be opened in detail. Thus the next three chapters will take a close look to each of these dimension.

4.2 Functional alignment

Functional alignment focuses on the strategic relationships between the corporate and functional levels of organizations. With the MBOs this manifest as the strategic fit between the corporate level and individual SBUs. (Reynolds and Yetton 2015, p. 103) Reynolds and Yetton (2015, p. 103) point that traditionally functional alignment is observed between a single business strategy and a single IT strategy. This is not enough when it comes to MBOs with more than one business line. With MBOs one has to take into account all the nuances of SBUs in their strategies and focus on the overlapping and enhancing parts to find the value from the functional alignment (Reynolds and Yetton 2015, p. 103). On a strategic and functional level the enhancing and enabling areas are the main points of the added value promise of functional alignment. There are the ones that criticize business and IT alignment to already be common knowledge among organizations, thus the competitive advantage from the functional alignment could be low (Chan and Reich 2007a, p. 298). This could be true if we would look at the alignment on an individual IT system level. A basic ticketing system can be used as an example. On its own this kind of system is not a strategic advantage nor a unique tool as it can be said to be implemented by many companies. When an organization aligns this ticketing system to its business and builds unique IT enabled processes, functionalities and even services then the benefits and value creation possibilities of functional alignment can be realized. Reynolds and Yetton (2015, p. 105) emphasize that this enabling and enhancing capabilities and opportunities are the core of functional alignment.

SAM is one of the most widely used models when it comes to functional alignment (Chan and Reich 2007a, p. 303). The SAM introduced the four domains alignment can be analyzed between; business strategy, IT strategy, organizational structure and IT infrastructure (Henderson and Venkatraman 1993, p. 476). Figure 10 illustrates the domains and the connections between them. The connections between business strategy and organizational structure is marked with a line as is IT strategy and IT infrastructure and processes. This highlights one of the two of main type's integrations between the domains called strategic fit. Strategic fit focuses on the alignment between the external or strategic level and internal or operational level. The dashed lines illustrate the functional integration, the second main integration between the domains. Functional integration focuses on alignment between the business and IT level. Henderson and Venkatraman (1999, p. 477) emphasize that both integrations are important to the organization. In short the objectives of the integrations are like follows; strategic fit ensures that an organizations do right things and functional integration ensures that organizations executes them effectively.

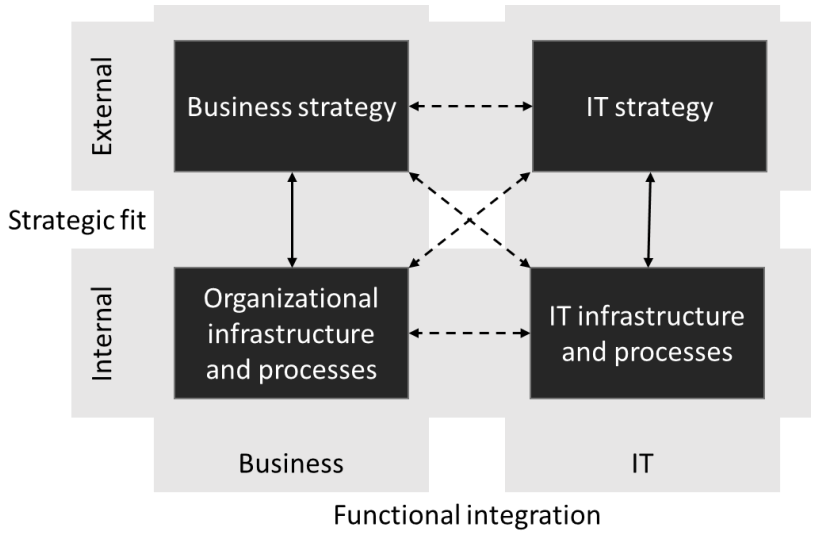

Figure 10. *Strategic Alignment Model (Adapted from Henderson and Venkatraman 1993, p. 467)*

The connections are the core of SAM and analyzing the alignment through any one of the connections should improve the business and IT alignment inside any organization. Henderson and Venkatraman (1999, p. 477) highlight that this level of analysis doesn´t provide optimal results. Instead analysis should include both strategic fit and functional integration. For this Henderson and Venkatraman (1999) introduce four dominant alignment perspectives which are introduced shortly in the table 10 below. The alignment path shows through what integration each of the perspective should be executed. For example strategic execution, which is the most common case of functional alignment, would start from and be driven by business strategy, the organizational structure would follow this driver and finally IT infrastructure should be optimized to fit this need. (Henderson and Venkatraman 1993, p 477) The perspectives are the main scenarios of how functional alignment can be improved organizations operations. The management has to decide what parts of the functional alignment they need to focus on and balance the use of the perspectives accordingly. Henderson and Venkatraman (1999, p 475) emphasizes that in functional alignment managers of organization are in the key role of ensuring successful implementation.

Table 10. *SAM dominant alignment perspectives (Henderson and Venkatraman 1993, Pekkola and Nieminen 2015)*

Perspective	Alignment path	Description
Strategy execution		Business strategy drives organization structure and IT infrastructure. Aim to server business in a sufficient manner. Performance criteria is the cost of the services.
Technology transformation		Business strategy is executed through IT strategy and required IT infrastructure and processes. This perspective aims for technological leadership.
Competitive potential		IT strategy pushes new opportunities that form business strategy and then are supported a fitting organization structure to the opportunities. Focus is to acquire business leadership.
Service level		IT strategy defines wanted IT infrastructure around which the organization structure can be developed on. Objective of this perspective is to improve customer satisfaction.

With the four domains, two type of integrations and four different perspectives, SAM shows in a compact form what functional alignment contains and how it can be improved. Henderson and Venkatraman (1999, p. 482) intended SAM to be a model the build analysis on in both organizations and in academic research and based on its many references and utilizations they have been successful with this goal. (See e.g. Sabherwal et al. (2001); Gerow et al. 2014; Reynolds and Yetton 2015) Also both Pekkola and Nieminen (2015) and Reynolds and Yetton (2015) argue towards the benefits of assessing functional alignment. Reynolds and Yetton (2015) summarize the value proposition of functional alignment as follows: *"IT functional alignment has a positive effect on organizational performance: The profit driver for this effect is the development of IT-based competencies contingent on complementary business and IT capabilities"*. Pekkola and Nieminen (2015) in turn found similar benefits of applying functional alignment analysis to their case study. Additionally they recommend adding clearer guides or notions on the implementation of functional alignment to the model. (Pekkola and Nieminen 2015, p. 9) If we return to SAM, it can be said that the execution of the concept is not described in detail. Also Reynolds and Yetton (2015) don't highlight steps on how to improve or notice insufficient functional alignment. Thus in this paper alongside of analyzing the conceptual level of functional alignment, practical challenges and manifestations of problems should be listed.

4.3 Structural alignment

Structural alignment aims to point out the relationships between firm-wide strategies at corporate level and how they connect to the SBU level strategies and practices. The challenge in structural alignment is to coordinate decision between corporate and SBU level

successfully and to maximize benefits from common IT platform, processes and governance, while maintaining flexibility on SBU level. (Reynolds and Yetton 2015, p. 105) In the structural alignment literature is analyzed between the traditionally common corporate level and specific needs of the business, to see if common resources are utilized well enough. (Broadbent et al. 1996, Hodgkinson 1996). For example Broadbent et al. (1996) made an extensive case study and review on what kind of benefits does a deeper utilization of the common infrastructure brings in different cases. This study showed that organizations, which focus on finding the common areas and utilize them, have more capable IT infrastructure. (Broadbent et al. 1996, p.185) This is arguably a great benefit. With MBOs there is an added level of complexity. Each SBUs might not share same common needs with corporate level. Reynolds and Yetton (2015, p. 105) criticize Broadbent et al. (1996) for not taking this into account in their study. As we also add the varying needs of SBUs, Reynolds and Yetton (2015) see that structural alignment creates value to the organization through two ways. First through appropriate allocation of the resources in governance and infrastructure and second through reduces agency costs and third through better governance and cooperation decision can be made at the right level and ensure all parties are being aware of this situation. (Reynolds and Yetton 2015, p. 105) The third point is interesting and refers back to acknowledging that SBUs can have different needs towards the corporate level.

Similarly as Pekkola and Nieminen (2015), this thesis refers to Broadbent and Weill (1993) model of structural alignment as the dominant baseline for analysis of structural alignment. This model uses similar domains as the SAM. Divided between the domains there are 15 propositions that, if executed better than the possible competitors, bring competitive advantage to the organization (Broadbent and Weill 1993, p. 174). For the purpose of this thesis, these 15 propositions provide focus areas to identify challenges in. Figure 11 shows the four domains and the proposition connected to them. Broadbent and Weill (1993) have developed their model based on study among large banking companies. In this paper case organization is large global industrial organization with a crowing service sub business. Banking is regarded as an information heavy industry (Broadbent and Weill 1993). It is also know that with the rising trend of service business and digitalization, traditional industry organizations are becoming more and more information heavy as well (Ministry of Employment and the Economy 2015, p. 105). Thus there are some common areas with Broadbent and Weill (1993) sources and the case organization of this thesis. Which in turn means the propositions presented in the model should give sufficient surface for analysis of structural alignment.

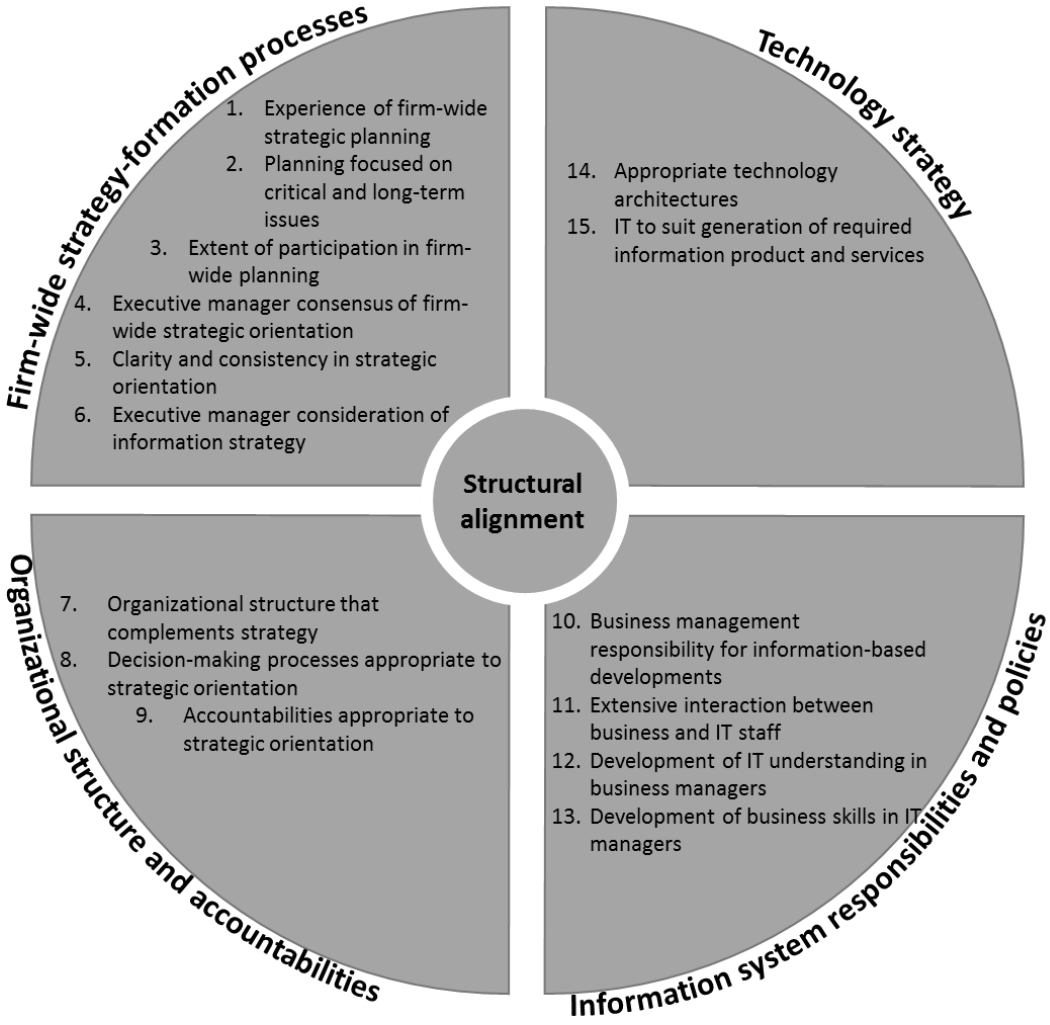

Figure 11. *Structural alignment model (adopted from Broadbent and Weill 1993, p. 175)*

Firm-wide strategy-formation processes highlights how to make real competitive advantage from the business strategy. The first three propositions (1-3) focus on the need to have comprehensive planning process. Inputs from all areas helps to maintain and create alignment. (Broadbent and Weill 1993) The two next propositions (4-5) revolve around managers and clear process. Clear process makes it easier to understand strategy and enables institutional learning, which is especially useful when it comes to alignment problems. The last proposition in the first domain is there to remind on the fact that IT should be involved and included in the business strategy. (Broadbent and Weill 1993) The organizational structure and accountabilities have three propositions, which focus on three large components of business infrastructure. When organization structure, decision-making and accountabilities complement business strategy this improves alignment and can produce competitive advantage (Broadbent and Weill 1993). Nevertheless these are important areas and need to be included in the analysis. Information system responsibilities and polices domain addresses the alignment between business and IT the first time in the model. The proposition 10 states need for business involvement straight from the development phase of IT capabilities and the proposition 11 is a reminder on the two-way

nature of business and IT alignment. The last two proposition in this domain state the in for proper structural alignment both IT and business representatives need understand one another. (Broadbent and Weill 1993) Understandable language and knowledge sharing challenges (Table 6) have clear connections to these two propositions. Finally the fourth domain, technology strategy, only has two proposition. Broadbent and Weill (1993, p. 174) had difficulties of identifying these propositions as the case banks had the IT strategy already deeply connected and part of the business strategy. Proposition 14 and 15 mainly highlight that IT ought to fit the needs of the business flexibly (Broadbent and Weill 1993).

The domains themselves are clear focus areas when it comes to structural alignment and proposition provide a solid view to the different aspect of the topic. Broadbent and Weill (1993) structural alignment model is from the oldest paper compared to the other three selected methods. From the figure 11 arrows that indicated the order of addressing the domains are intentionally left out. Broadbent and Weill (1993, p. 174) emphasize that domains should be addressed counter clock wise starting from firm-wide strategy-formation process. This can be understood to mean that IT should follow business. As it has been earlier stated business and IT alignment is regarded as two-way stream in the context of this paper. Also the thesis takes a look at the business and IT alignment from the point of view of the IT. Thus emphasizing business perspective is both challenging and not within the scope of the research.

Broadbent and Weill (1993) structural alignment model is used as check list when it comes to assessing the state of structural alignment in the case organization. It is important to find the benefits of existing structural alignment areas and identify improvement areas in the governance. Reynolds and Yetton (2015) highlight the importance of governance and the benefits it brings to the organizations. Proper and flexible governance is what Reynolds and Yetton (2015, p. 110) argue to enable finding the common resources and properly distributing the decision making and simultaneously ensuring involvement from all relevant parties.

4.4 Dynamical alignment

The third alignment dimension is called the dynamical or temporal alignment. Dynamical alignment includes the time dimension to the analysis of the business and IT alignment. Dynamical alignment can be condensed to the concept of flexibility. Questions such as, how flexible can IT be compared to the changing business environments, are what dynamical alignment focuses on answering. Reynolds and Yetton (2015) connect these challenges to decision making on strategical level and how the different strategical decision and chained together. Also mentioning the importance of modular and flexible IT platforms that can be reconfigure with changes. (Reynolds and Yetton 2015)

Reynolds and Yetton (2015, p. 106) explain that one way of addressing dynamical alignment is to use SAM at multiple points of time inside the same organization to capture the changing aspects of business and IT alignment. In a cross-sectional study like this paper this is not possible. Thus for the Sabherwal et al. (2001) model of punctuated equilibrium is used as base to identify the challenges in the dynamical alignment at the case organization. The same model was also used by Pekkola and Nieminen (2015) in their case study. That being said even the punctuated equilibrium should be applied to organization based on its history (Sabherwal et al. 2001). Pekkola and Nieminen (2015) used the same model in their interview based research similar to this thesis. Figure 12 illustrates the ideal state of dynamical alignment that is used as the base line to analyze dynamical alignment through punctuated equilibrium model.

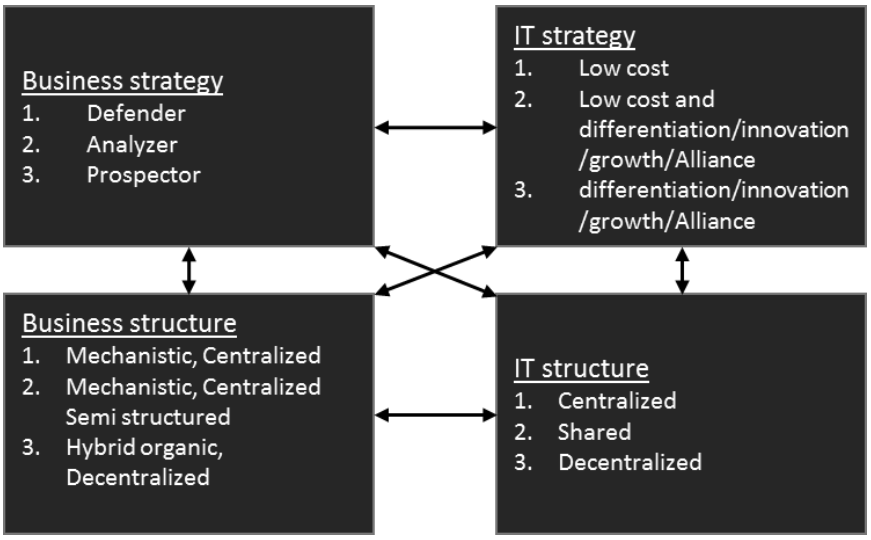

Figure 12. *Dynamical alignment theory-based ideal alignment patterns (Adapted from Sabherwal et al. 2001, p. 183)*

Dynamical alignment assessment through punctuated equilibrium revolves around assessing the scale of change in organization and comparing it to the theory-based ideal alignment patterns visible in the figure 12. Figure 12 has six arrows which illustrate the six alignment types; business alignment, strategic alignment, structural alignment, IT alignment, cross-dimensional alignment 1 and cross-dimensional alignment 2 (Sabherwal et al. 2001). For example the optimal business alignment pattern is if the business strategy characteristics point to defender and IT strategy characteristics point to low cost. Thus the ideal state is always when in all of the domain the characteristic point to the same number (Sabherwal et al. 2001).

The characteristics used by Sabherwal et al. (2001) are mainly self-explanatory. Except for the business strategy characteristics. These three profiles of business strategy originate from Miles et al. (1978) viable business strategies. Later on these profiles have been connected to business and IT alignment research. For example Sabherwal and Chan (2001) connect these business strategy profiles to IT strategies that compliment them. The results of Sabherwal and Chan (2001) are aligned with the connection shown in the figure 12.

Defenders focus on their core strengths and produce high quality but standard product. They need effective and efficient process and tend to have only few core technologies. For Defenders IT efficiency is the most important aspect. (Sabherwal and Chan 2001) Analyzers are between the defenders and prospectors. They aim to benefit from both of the characteristics. Analyzers try to combine few of their strengths to maximize opportunities but also have minimal risk. Their products might vary but business domains remain the same. Analyzer benefit from a comprehensive IT strategy and infrastructure. (Sabherwal and Chan 2001) Finally the prospectors. There are the risk takers of the three options. Prospectors constantly seek new products and opportunities and usually have heavy R&D departments. Thus from IT prospectors need flexibility. (Sabherwal and Chan 2001)

Sabherwal et al. (2001) use this ideal state of alignment to determine the nature of change and how well an organization has reacted to it. For example if business strategy of an organization changes from defender to analyzer, also other domain should move to the second characteristic of that domain. The more conflicts there are to this rule, the less aligned the organization is. Sabherwal et al. (2001) define two types of changes organizations can have; evolutionary and revolutionary. Evolutionary change is the organic change and development in the organization. IT does not usually include shift form characteristics to another in any domain, instead the change happens inside the characteristic. Revolutionary changes is then the step from one characteristic to another. (Sabherwal et al. 2001)

In this paper dynamical alignment is analyzed through two views. First in what kind of alignment state is the organization and second how is it reacting to changes that have happened inside it. MBOs add another layer in the analysis. Reynolds and Yetton (2015, p. 110) describe that dynamical alignments goal in the MBOs is usually to minimize the negative effects of change. If the dependencies are mapped with dynamical alignment in mind, the change can be executed properly. On the other hand if this is not the case IT flexibility is going to decrease. Important aspect of dynamical alignment in MBOs is to know what changes can be executed in SBU level and have no vital dependencies to other SBUs and what change can only be monitored by the corporate level. (Reynolds and Yetton (2015, p. 110)

4.5 Utilization of multi model approach

Multi model approach has not been utilized in the business and IT alignment extensively yet. For this thesis only the studies implemented by Reynolds and Yetton (2015) and Pekkola and Nieminen (2015) were identified as existing examples. The multi model approach was selected as the model based on its fit for the case organization and the recommendations from business and IT alignment literature, but it has not been utilized to identify challenges in business and IT alignment. Thus the utilization of this model needs to be explained.

The potential benefit of the model is in the holistic perspective it can provide. As seen from the figure 9 multi model approach acknowledges multiple different aspect of alignment dimension, MBO nature of an organization, organization levels and of course the IT and business entities. Pekkola and Nieminen (2015) found out that this kind of approach to business and IT alignment is beneficial and can provide complete understanding on the scale of alignment in an organization. Reynolds and Yetton (2015) theorized the same and argued that analysis on all the dimensions can add value to an organization.

Functional alignment can help to find the overlapping capabilities and enable the effective utilization of these capabilities. Structural alignment can be used to ensure more effective governance between the corporate and SBU levels and thus create smoother operation and value. Finally dynamical alingment can be used to make sure all development actions are align and possible double implementation or hidden dependencies are more visible. These can be avoided and corrected and thus value is created for better aligned development. (Reynolds and Yetton 2015) These were all examples given by Reynolds and Yetton (2015) and summaries the possible utilization of the multi model approach on business and IT alignment.

Together the chosen methods of each dimension and the theoretical principles of Reynolds and Yetton (2015) have potential for effective and holistic analysis of business and IT alignment. The scope and perspectives of the model are aligned with the case organization and the needs of this thesis. The empirical part of the thesis tests if this potential can be realized and holistic findings from the challenges of business and IT alignment in the case organization can be identified.

5. EMPIRICAL RESEARCH

Empirical research chapter will introduce the empirical elements of the thesis. The chapter starts with a description of the case organization. This paragraph explains in enough detail to what kind of organization is the research conducted for and in. The case organization description is also an important part of the finding and results of the thesis. The second paragraph open the selected empirical method interview. The execution and data collection process of the interviews are also explained in this section. Beside this the analysis process of the data is described in this chapter to ensure the findings are justifiable and thus usable inside the case organization.

5.1 Case organization

In the introduction the case organization was shortly introduced but a more extensive introduction is needed for two reasons; to understand the MBO nature of the organization and as a baseline to reflect the dynamical findings of the empirical study. As already mentioned the case organization is a truly global organization. It operates globally and has offices in all of the continents except the Antarctic. The case organization operates in around 50 countries and has approximately 12 000 employees. Currently the case organization phases a difficult financial status with the market not providing any external growth. Thus the primary source of growth needs to come from internal optimization. The changes that are described below have taken place in the last 3 years. This is an important point to acknowledge besides describing the changes themselves.

The company structure of the case organization is presented in the figure 13. From it the MBO nature of the case organization is clearly visible. The case organization has two business SBUs and one service SBU. In the context of this thesis all of these SBUs are regarded equal. Internally there are size differences among the SBUs but in this thesis this factor is not relevant. All of the SBUs operate globally and utilize IT solutions. The second part of the organization structure are the shared services. In the figure 13 human resources, finance and IT are listed as the most significant shared service units. The IT is organized and managed centrally in the case organization.

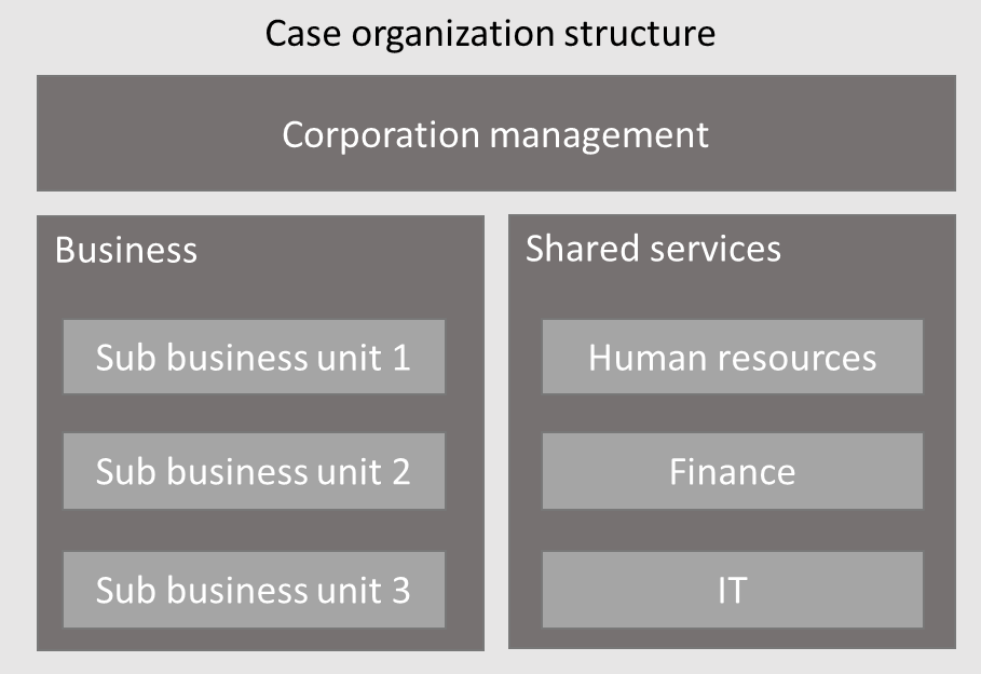

Figure 13. *Case organization structure on a general level*

Another important aspect of the case organization that needs to be covered is to understand the degree of change it has undergone in the few previous years. It is not required to list a detailed timeline of every change in the business and IT functions. Instead the largest and most meaningful changes in the structure should be explained. The biggest change the case organization has undergone is demerger from a larger more SBU driven organization. Previously the case organization was part of even large industrial company. This company was divided into smaller business units that had greater autonomy. During this time the IT functions were also partly the responsibility of the business units. The large industry company split into the case organization and to another large industry organization. The demerger started as many structural change that eventually were completed leading to the structure illustrated in the figure 13. The demerger was extensive change in both business and IT functions.

Following the demerger business focus was intentionally shifted to high profitability products. Also the SBUs of the organization were to a degree restructured and streamlined. Service SBU was also separated the two industry units as its own unit. Though it is still clear connected to the industry SBUs. As results of the high profitability shift in the strategy and the restructuring a large part of the case organization was sold. This was all done to form a more strategically focused organization.

The IT functions of the case organization have also gone through major changes. Alone the structural changes have affected the personnel greatly and moved responsibilities around. As mentioned the larger industrial company had shared IT organization with part of the IT responsibilities in the SBUs. This has changed with the organizational structure changes. Now the majority of the IT is under a centralized unit. This is a major change in

both the structure and the culture of IT. The primary IT infrastructure partner changed from one service provider to another. This lead to a large server infrastructure virtualization project and major changes to the ways of working related to IT infrastructure.

As a summary the case organization has gone through major changes in all of the areas form organization structure to culture and all the way to individual services. The case organization is still completing some the changes listed above and aims to slow down the rate of the changes for now to recover from what have been executed are soon the be completed. Taking a look at the business and IT alignment challenges after these major changes is an optimal situation. As the problems ought to be easier to identifying and the results should also provide a good baseline for the recovery process in the case organization.

5.2 Interviews

This paragraph explains the empirical data collection method used in the thesis on a practical level. Where the paragraph 2.2 empirical methods take a look at the academic side of the data collection, the aim of this section is to cover the actual execution and usage of the method. This is necessary for reader to be able to interpret the findings of the research and to understand what the conclusions are based on.

5.2.1 Interview execution

As discussed in the paragraph 2.2 semi-structured empirical method suits the goals of the thesis best. For this reason theme interview was selected as the empirical data collection method. In practice business and IT alignment can manifest though numerous channels and making a structured interview or survey could have provided too general results for the purposes of the thesis. With structured methods sample size can be larger as the amount of quantitative data is higher, but with semi-structured methods like theme interview the qualitative data can be more complete and the connection to the actual situation in the organization on a deeper level. Thus for these practical reasons theme interview was chosen as the empirical data collection method.

In the question list there are 11 questions divided into four themes. The appendix 1 lists the questions and themes. These themes and questions are based on the chosen model of each dimension and the questions Pekkola and Nieminen (2015) introduce in their study. Pekkola and Nieminen (2015) list questions for managers to assess the alignment in their organizations. The first theme, strategy, aims to rise discussion on strategy itself, formation process and communication. This theme focuses mainly in the functional alignment. The second theme, relationships, has questions on the general fit between IT and business inside the organization. This theme provides insight to all three dimensions. The third theme, processes and structure, focuses mainly on the structural alignment inside the case organization. Though the discussion on change can provide dynamical findings

are also. Finally the fourth theme, investments, connects the abstract dynamical aspect of business and IT alignment to a practical areas. Investment are usually larger projects and the perspective from these but also the possible results of the investment can give good insight to the way organization handles change. Through these themes mapping of the organization's challenges in business and IT alignment is possible.

The selection of interviewees was especially important for the thesis. As theme interviews can produce varying results and the analysis can take long time. Thus amount of interviewees is more limited and input from one interview is more significant than for example in a survey. In the business and IT alignment the primary perspective of the thesis is IT. This is also visible at the interviewee list presented in the table 11. For the purpose of data analysis three larger groups of interviewees were defined; Business, IT and business interface and IT. Also the interviewee groups ensure that both side of the business and IT alignment have representatives and input in the empirical research. As the baseline each of the interviewee groups were required to have at least three different interviewees to ensure that the findings are complete enough. Beside this all of the interviewees have to have the visibility to the business and IT alignment interface. To ensure this requirement was fulfilled only employees from with the position of manager and upwards were selected for the theme interview.

To meet all of the above requirements internal contacts for the case organization were asked to suggest possible interviewees. Also at the end of each interview the interviewee was asked to recommend other who would meaningful input to the research and could be possible interviewees. At the end of this process 14 interviewees were conducted, of which five were part of the business group, five part of the business and IT interface group and four from the IT group.

Table 11. *Interviewees list and short role descriptions*

Code	Group	Business unit	Description
Director-1	Business	SBU 1	Production plant director
Director-2	Business	SBU 2	Engineering unit director
Director-3	Business	SBU 1	Engineering offering management director
Director-4	Business	SBU 2	Director of business unit internal consulting
Director-5	Business	Finance	Financial unit director
Director-6	Business and IT interface	Regional IT	Regional IT director
Manager-1	Business and IT interface	IT	Regional IT manager
Manager-2	Business and IT interface	IT	Regional IT manager
Manager-3	Business and IT interface	IT	Business application development manager
Manager-4	Business and IT interface	IT	Regional IT manager
Director-7	IT	IT	Director of IT service segment
Director-8	IT	IT	Director of IT service segment
Manager-5	IT	IT	IT service manager
Management-1	IT	IT	Member corporate IT management

The interviewees in the business group are all, expect one, part one of the SBUs of the case organization. The exception, Director-5, is from the financial department of the case organization. Because of the IT perspective of the thesis financial department can regarded as a customer of the corporate IT function. Thus the Director-5 was placed to business interviewee group. Other business group interviewees are director level manager of different units inside the SBUs. Business and IT interface group consist of members that operate between the business and IT. Four of the interviewees are responsible of the IT service execution on their regional area. They have straight connection to the local units of their regions. The fifth interviewee in this group is one of the team leaders inside IT function that is responsible of providing support and developing a production information system. In the IT group there are interviewees that are operating on corporate level. Of course this area has connection to business. Nevertheless the connection is not as clear as with the other groups. Two of the interviewees are leaders of corporate IT segments. They are responsible for a larger IT service portfolios. Manager-5 is a service manager from one units under the IT service segments. Finally the Management-1 interviewee is a member of the corporate IT management team.

Actual interviews were conducted and recorded with corporate instant messaging and voice chat tool. One exception being the Director-4 with whom the interview was conducted face-to-face, but recorded similarly as the other interviews. The recordings last from 32 minutes to 56 minutes, averaging at 42 minutes. It should be noted that only the

question part of the interview was recorded. Thus the introductions at the start of each interview and the enquiries about other possible interviewees is not included in the interview recordings.

5.2.2 Interview analysis

Interviews were analyzed extensively with mirroring the points and examples given by the interviewees to the information for literature review. The chosen models on each of the dimension were utilized to identify and categorize the challenges from the theme interviews. Both qualitative and quantitative methods of data analysis were utilized to find the relevant challenges from the interview data. Through due to selected empirical method of theme interviews, data analysis is focused on the qualitative analysis.

The actual analytical process is presented in the figure 14. The interview data are the recorded interviews conducted inside the case organization. This data was then partly transcribed to interest points. Due to semi-structured nature of the interviews and the clear goal of identifying challenges, a selective transcription is justified (Saaranen-Kauppinen & Puusniekka 2006). To ensure that context of the comments was understood, the interest points were not all connected to challenges, instead all of the interest points were regarded as comments related to business and IT alignment in the case organization in general. This slightly broader view ensured that challenges were analyzed with the context and not just as individual points. The interviews produced total of 435 interest points. These interest points describe the problems the case organization is facing currently.

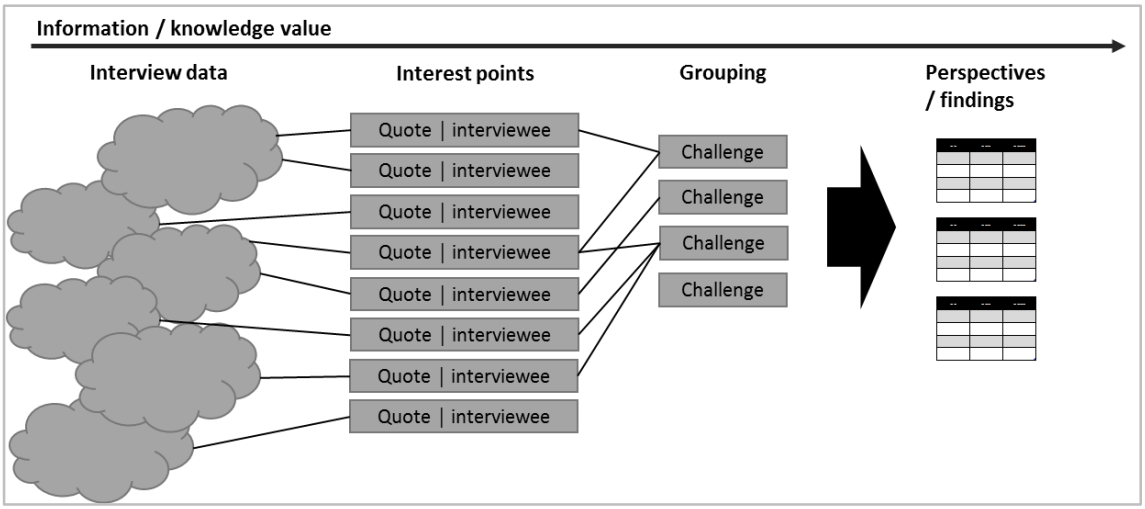

Figure 14. *Analysis process*

Next step of the analysis was grouping or categorization and connecting the interest point to challenges. Grouping also enabled quantitative perspectives to the data (Saunders et al. 2009, p. 492). As mentioned in the chapter 2.3 the theme interviews was the main empirical method of the thesis. Thus all of the challenges originate from the interview data. Grouping was done by utilizing the selected models from each of the dimension and then forming challenges from the groups of interest points. Utilizing the theoretical framework

is a common approach to the grouping (Saunders et al. 2009, p. 492). Because the challenges originate from the selected models of each of three dimension they were naturally connected to the dimension. The grouping was done in two iterations first iteration produced a list of challenges, which were then compared with each other. This eliminated groups that were completely overlapping or subgroups and were combined to a larger group. At end of this process 32 individual challenges were identified from the interview data.

Finally the grouped or categorized data was processed to findings. There were multiple perspectives that could have been used to present the data, but the most suitable for the needs of the thesis were the dimensions and interview groups. These perspectives provide holistic and multi-level approach the data analysis and ensure justifiable findings. Also taking to account the limited interviewee count these perspectives can be argued to be relevant and correct in terms of intake and scope of the source data. For example numerical calculations, based on the occurrence of a challenge is not justified as the qualitative nature of an occurrence cannot be assumed to be the same in all of the cases. The commonness instead is justifiable and is presented through three cases. In the first case, challenges has not been mentioned in the interview group at all. In the second case, only few have mentioned the challenge. Here 49% was seen as a relevant percent. The third case is when more than 49% percent of the interviewees in the group have mentioned the challenge. These perspective provide sufficient framework for the analysis and presentation of the findings.

6. FINDINGS

In the findings chapter all of the identified challenges that the case organization is phasing are explained. These challenges provide an overall picture of the difficulties in the business and IT alignment in the case organization. The chapter six answers to the fourth research problem. The 32 challenges explained in this chapter together are the answer to the research question.

6.1 Functional alignment

The challenges in the functional alignment are connected to strategic level of business and IT cooperation. The table 12 lists the identified challenges in functional alignment dimension. All of them either connected straight to strategic work or cultural factors. The cultural factors, like the lack of understanding of a specific area, are regarded as functional challenges as they have no clear structural or dynamical problems or root causes. Functional challenges are to a degree more abstract than other dimensions' challenges.

Table 12. *Functional alignment challenges*

Description	Business	Business and IT	IT
Business and IT do not understand each other's environments	< 50%	≥ 50%	≥ 50%
Business has information systems not acknowledge by the IT	< 50%	< 50%	≥ 50%
Unmanaged relationship between business and IT	< 50%	< 50%	≥ 50%
IT processes do not support business processes	< 50%	≥ 50%	< 50%
Knowledge gap between IT and business	< 50%	< 50%	< 50%
IT is not flexible or fast enough	< 50%	≥ 50%	No points
Outsourcing local IT resources causes knowledge bleed and lower customer satisfaction	< 50%	< 50%	No points
Use of different languages	< 50%	< 50%	No points
Unclear strategic fit	No points	≥ 50%	No points

The first challenge was identified in all of the interviewee groups and argues that **business and IT do not understand each other´s environments**. Problems seem to exist on both sides. Manager-2 feels that the business does not see the need to talk about or with IT. Manager-1 emphasized that business knowledge is vital for good solutions. Lack of understanding of the realities in the business environment were also referred to with some direct support functions like ERP support.

"I think there are problems on both sides in the organization. … Business managers' do not talk enough about IT"

[Manager-2]

"I think the IT sees business process as simple, I think we should understand and be part of the business. … Business knowledge leads to better solutions"

[Manager-1]

So called shadow IT seems to be a problem in the organization. There were comments like the one from Manager-5, towards **business having information systems not acknowledged by the IT**. There were few reasons given to this phenomena. One example was that business sees IT as too slow and another example was that IT has not understood the business needs thus business has moved on without IT. Director-3 even pointed out there has been cases where IT and business developed same things at the same time separately.

"We get surprises from the business side, which makes it difficult for IT. For example they might say they have an application, which we then need to fit to our infrastructure"

[Manager-5]

"We have had cases where business IT plan in cross and same things, … This of course ineffective"

[Director-3]

Interview data points out that **the relationship between business and IT is unmanaged**. There seems to be the need and will for this but the ways of doing it do not exist. Management-1 confirms it directly by stating there is no dedicated function to manage business and IT relationship. Based on the interview data the there are no strategic lining for the overall business and IT cooperation. Instead this relationship has evolved over time. The problem here is the massive changes that have taken place in the case organization. It is questionable if the relationship of business and IT has evolved to the direction organization would want it to evolve

"I do not know who drives the cooperation between business and IT. … There is intent to do so, but no one is executing these actions"

[Director-6]

"Relationship between IT and business has evolved over time, not actively developed"

[Manager-3]

Some interest points highlight that **IT processes might not support business processes**. For this many possible root causes were mentioned. Manager-4 pointed out the lack of global perspective and Director-5 insufficient interaction and training. Beside these two

points lack of understanding and flexibility were mentioned as reasons why IT processes do not support business processes.

"Maybe the variety of our deliveries is not clear from Finland and thus the systems do not align with the global needs"

[Manager-4]

"The lack I see is in the business interaction and training. The rolling is done by consults not knowing how the business is working"

[Director-5]

All of the interview groups have points that connected to the **knowledge gap between business and IT**. This gap refers to an overall lack of understanding related to personnel, environments and e.g. ways of working. Director-4 said this straight up in the interview. Interviewees connect the gap to the large changes that have happened inside the organization. The challenge can be identified from cooperation, communication and needs of practicing ways of working before they start work.

"We have a gap between business and IT knowledge"

[Director-4]

The flexibility of IT was questioned in the interviews. The changes have been extensive as mentioned already multiple times. It seems that **the lack of flexibility in IT** is also enhancing the bad effects of change. In the interviews this was realized in slow development times, growing gaps and approvals going high in the hierarchy. This challenge seems to be visible mainly in the business and IT interface.

"There are situation where we locally wait for global solutions for an extended period of time"

[Manager-2]

The case organization seems to battle with multiple kinds of gaps. **Ongoing outsourcing of local IT resources seems just enhance the effects**. Manager-2 pointed out some gaps from earlier changes have not even been filled and new once are forming. Others fear and have experienced drop in service quality and flexibility. Though Director-6 points out this will and is getting better over time. Nevertheless challenges exists and affects the organization´s operations.

"Outsourcing brings the challenges with changing workstyles and responsibilities. … We are improving in this"

[Director-6]

The use of different languages was highlighted by the business interview group. Mainly the problems with understanding the IT language were listed but also the need

for a common language. Director-2 had an example how problematic a challenges like different terms can be especially if there are also other challenges in the process.

"We do not know the IT terms and do not have clear picture of the results. … Only when the project is finished we understand what was discussed at the start"

[Director-2]

In the interview group working at the business and IT interface three out of the five interviewees addressed **the unclear strategic fit**. It is possible that the interviewees work environment emphasizes the problems existing in the strategic level. Manager-4 pointed out that the facts and the strategy do not align properly. One example was the focus in service business but the increasing amount of vendor usage. Example from IT side a weird information system decisions were made that did not align with the existing ecosystem.

"I see that the facts and global strategy do not align"

[Manager-4]

6.2 Structural alignment

The structural alignment dimension challenges are listed in the table 13. These challenges are closer to actual ways of working and practicalities than the functional alignment challenges. This dimension had the largest amount of challenges out of the three, but the challenges are also to a degree variants of each other. One other explanation could be the practical nature of structural alignment thus the challenges might be easier to identify. Communication challenges have been categorized to the structural alignment dimension, but these also have functional aspects. The first challenge in the structural dimension is a good example. This challenge is related to knowledge gap challenges listed in the functional alignment table 12, but has a clearer connection to the information management process than the functional challenges.

Table 13. *Structural alignment challenges*

Description	Business	Business and IT	IT
Information does not flow between IT and business	≥ 50%	≥ 50%	≥ 50%
Lack of formal communication networks	≥ 50%	≥ 50%	≥ 50%
Lacking communication of strategy on team level	< 50%	≥ 50%	≥ 50%
Strategy is not communicated properly	< 50%	≥ 50%	≥ 50%
Lack of communication between organizational units	≥ 50%	≥ 50%	< 50%
Roles are not clear enough	≥ 50%	< 50%	≥ 50%
Unclear organization structure	< 50%	< 50%	≥ 50%
Lack of contribution options to strategy	No points	≥ 50%	≥ 50%
Not defined processes or governance	< 50%	< 50%	≥ 50%
Underutilized processes	< 50%	< 50%	≥ 50%
Extensive escalating needed to get problems solved	≥ 50%	< 50%	No points
The continuous service process does not work and is slow	≥ 50%	< 50%	No points
Communications and process tied to persons	< 50%	< 50%	< 50%
Unclear strategy formation process for employees	No points	< 50%	< 50%
Lacking resources	< 50%	< 50%	No points

All of the interview groups acknowledged the challenges in **the information flow between IT and business**. Out of the 14 interviewees only 2 did not refer to this challenge and it the most referred challenges out of all of the challenges. On the other had this challenges is broad. Director-5 pointed out that on some levels information flows but the challenges is there in other areas as seen from the other quotes. For IT communicating with business seems to be difficult. Manager-1 stated that IT hesitates to contact business for some reason. This challenges is a broad one and there also comments that point to a good level of communication like the example given by Manager-3.

"I have follow up meeting with the regional manager every month, but this only the regional IT level"

[Director-5]

"I think we (IT) are to hesitant to discuss or contact the business"

[Manager-1]

"Once there has been a common project then the cooperation works better"

[Manager-3]

The second challenges in structural alignment was also referred across the interview groups. Much like in the first challenge there were comments for and against on **lack of formal communication networks**. In some areas there are clear forums. An example of

this was engineering applications in other areas interviewees saw lack of forums. Management-1 mentioned that through the executed structural changes the need for this kind of forums would not exist anymore, but the interview data still has a lot of areas where interviewees would like to have formal communication networks. Also the change to global IT seems to still be in progress as there are multiple points referring that communication networks were clearer during the business IT era.

"I think the problems is with the lack of common forums. … When IT was under business these forums existed"

[Director-3]

"I do not think there are enough shared forums between IT and business"

[Manager-1]

Strategy communication on team level is lacking in the case organization. On business side this was slightly better, but challenges is clear in IT. The top level communication seems to exist and work well, but the grounding of the strategy is not working. Grounding is mainly responsibility of the managers. The management in IT only host general events for strategic communication and then it is assumed that the managers and team leaders complete strategic communication for the team members on their level. In reality this seems to be unreliable and not managed. This is seen from the comments of Manager-4 and Director-2. Director-8 even confirms that in IT the strategy communication is lacking.

"I have not had any strategical implementation meetings with my manager"

[Manager-4]

"The communication happens through bigger meetings and through manager decision"

[Director-2]

"Grounding it (IT strategy) to the organization is not working."

[Director-8]

Strategy is not communicated properly in the case organization is similar to the previous challenges, but refers to the cross organization and general level strategic communication. The problems are still on the IT strategy communication. From interviews there were comments of not even knowing what the IT strategy is or that it does not exist. The main problems seem to be on the lack of official guidelines. The case organization has chosen to share the IT strategy through short principles, this approach was explained by the higher level IT executives. The principles seem not to be enough as the top level direction. For example Director-7 share few comments towards this. On top of this the IT strategy seems to be hard to interpret both inside and outside of IT or the content is not holistic enough. Manager-3 comment is an example of this.

"The current IT strategy is not talked about in IT, only few principles are present in the organization. … I would say the communicating of it has not worked"

[Director-7]

"For IT there is lack of global view to the business strategy. … Even though IT serves globally"

[Manager-3]

The communication problems between organization units basically refers to the silos in the case organization. The communication between the units is not yet working. This was clear for the business and business and IT interface as they are the ones trying to solve problems. Also IT internally realized the challenges in some areas. The silos seem to exist in team or unit level but also on location level.

"Mainly the problem is communication through units"

[Director-3]

"Even the so called business IT has had some problems answering the questions related to traditional IT"

[Director-4]

Roles are not clear enough challenge rises concerns of the responsibilities between business and IT. There are some comments toward unclear roles and who to ask for guidance, but also comments that this is getting better. The most interesting problems behind this challenge is related to the responsibilities between IT and business. Due to change to the global IT there seems to be areas where roles are not clearly defined. An example of this is the unclear application responsibilities as highlighted by the Director-8.

Example is a learning management solution, current HR platform can support this but business does not want to give the lead to HR as they want to do business with it"

[Director-8]

Unclear organization structure challenges is the most bipolar challenge identified in the case organization. As discussed earlier the case organization has gone through massive structural change. Most likely this change gap still exist inside the organization. The positive side is that this challenges has clear indications of getting better this is for example clear from the comment of Director-7.

"The business does not seem to understand what our IT structure is"

[Manager-1]

"The latest organization structure change to business domain point of view should aim to fix. Now is the first time we can even think of this"

[Director-7]

Lack of contribution options to strategy challenge is connected to the IT strategy. The IT strategy in the case organization is made by the CIO of the company. Directors give their input, but IT employees do not have ways to contribute to the IT strategy. With the earlier explained communication challenges this will only increase the unclear feelings toward IT strategy.

"We talked with CIO to form the old IT strategy, yet it was mainly CIO who created it"
[Director-7]

The next six challenges are all relate to processes, practices and policies in the case organization. **In the case organization processes and governance has intentionally been left not defined**. The comment from Management-1 clearly states this. Aim most likely is to limit the amount of change, but the problems still exist and are visible. Manager-4 and Director-8 both had comments stating and realizing the problems of not focusing on process, policies and practices.

"The process and practices have not been in a focus points at the moment"
[Management-1]

"Instead of building alignment through practices and process, it is done through the organization structure and roles"
[Management-1]

"With these communication issues, I think we have most problems due to not clear enough process and policies"
[Manager-4]

"Biggest challenges are in processes and practices"
[Director-8]

The case organization has not neglected processes in total though, but were there exist agreed or defined process, they seem to not be utilized properly. **Underutilized processes** were mentioned in many areas of operations from projects and communication to governance. Director-3 mentioned the project problems and Management-1 questioned the strategic communication process.

"With projects I fell we need clearer practices for them. ... We do have all of these but I feel these are not utilized properly"
[Director-3]

"We have a clear process for IT strategy communication. It is unclear if it works though"
[Management-1]

The process problems may be the root cause for the next challenge. **The need for escalation to get problems solved** challenge was not identified in the IT, because they are

not the once who need the escalating. Director-1 has gone as far as implementing a permanent escalation process for changes from his area to ensure the service they need. Director-4 listed another point of finding responsibilities vertically in the organization. This kind of escalating is of course much slower than being able to connect to right person directly.

"With new cases responsibilities have been looked vertically through organization"

[Director-4]

Similarly like the earlier challenge also **the slowness in so called continuous service process**, was not identified by the IT interview group. This challenges may be related to the amount of changes in the case organization, but the business interview group is clearly feeling the negatives effects of the changes with great extent. There are many possible problems behind this challenges that were mentioned in the interviews. Too hierarchal process, lack of resources and unclear roles are some examples. Whatever the root causes are Director-5 and Director-1 clearly stated the existence of the challenge.

"With the changes, it has been hard to get problems solved through IT helpdesk"

[Director-5]

"The problem at the moment is that the continuous service forums do not work. ... The response time are too big"

[Director-1]

In the interview data there were some points indicating that **process and communication is tied to persons**. These so called gate keepers might lead to slowness. This seems to be a known way of working in the case organization. Director-4 explained it shortly. The problems will start to realize if these gate keepers are for whatever reason unavailable.

"In more general level IT and business cooperation works through persons. A person has a role an through him we can advance matters"

[Director-4]

Second last identified challenge in structural alignment dimension is **the unclear strategy formation process for employees**. In business and business strategy side this seems to be more natural. With IT strategy though the process is not very clear at the team level of the organization. IT strategy comes mainly from the CIO of the organization with the IT directors giving input to it. The team level does not have ways to input to it nor is the process clear for them.

"I do not know how the strategy process starts or goes"

[Manager-5]

Due to outsourcing and structural changes there were some interest points toward **lack of resources** in the case organization. The lack of resources might be artificially high as organization is still looking and adjusting to the new ways of working. Director-6 summarized the challenge well. With the business IT era so called regional resources were much more usable and now these resources have to be realized on the global level much more clearly.

"In larger projects resourcing has been problematic. Global resourcing is done but regional one is lacking. … We need to understand the effort on global level now"

[Director-6]

6.3 Dynamical alignment

The dynamical challenges are listed in the table 14. These challenges are connected to the way the case organization can handle changes. The challenges are related to minimizing the negative effects of change and that the changes is understood from the start in its full extent. In the interviews the dynamical aspects of business and IT alignment were acquired from the way the organization sees investments and executes projects. From the interest points eight challenges were identified.

Table 14. *Dynamical alignment challenges*

Description	Business	Business and IT	IT
Project communication is not extensive enough	≥ 50%	≥ 50%	≥ 50%
Unclearly or not at all communicated project goals	≥ 50%	≥ 50%	≥ 50%
Insufficient reaction to change	< 50%	≥ 50%	≥ 50%
IT is seen as an only support function	< 50%	≥ 50%	≥ 50%
Investments are realized or started too late	< 50%	≥ 50%	≥ 50%
Investments and projects are not looked at with long enough time span	< 50%	< 50%	≥ 50%
Large investments need to be divided into smaller units to get them approved	No points	< 50%	≥ 50%
Business impact or strains of IT projects is not understood	≥ 50%	< 50%	No points

The first challenge on the table 14 is **the lacking communication inside IT projects**. Why this challenge is in the dynamical dimension is because it highlights the lack of understanding the scope of a change. On business side the problems behind this challenge are unclear cost structure and scope of IT projects. On IT side this challenge manifests itself as the difficulty to even discuss on the matters as there are hard for even the IT to understand. Better communication practices could help to solve this challenge.

"Problem with IT investments are the visibility with cost. … I think IT should use business cases to bitch their projects and investments"

[Director-4]

"It is hard to present ideas to business as they are difficult to even us"

[Manager-3]

Unclear or not at all communicated project goals challenge is connected to understanding of the changes. The discussion on the change goals between business and IT is important. In the case organization there seems to be a need to improve this area on both of the sides. Manager-3 pointed out that sometimes the bigger picture is not clear enough for the business and thus they might want the benefits before the ground work is even done. On the other hand business realizes that they need to be clear with their needs towards IT.

"We have an ongoing project where business wants in my opinion wrong things and in wrong order"

[Manager-3]

"We need to be clearer with the our needs towards IT"

[Director-4]

In the interviews there was a clear indication that the case organization **does not react sufficiently to change**. There are few practical examples of this like the one related to SAP rollout by Director-5. Also Manger-2 pointed out a problem regarding to the attitude towards changes. Also earlier presented challenges related to lack of processes or practices can be used as an example of this challenges.

"The change project should also define the changing responsibilities"

[Manager-2]

"SAP was more of on IT projects. … Business practices were not described"

[Director-5]

Some parts of the case organization seem to view **IT only as a support function**. There is nothing wrong on IT being just a support function if this role is intended and planned. This is not the case in this situation. The problem here is that the case organization would like the IT to be a partner to the business. Also there seems to be some conflicts on the way the relationship is viewed on a practical level. Director-6 mentions that IT is mainly just a support function where Director-8 implies that it should or at least could be more. The conflict mentioned above is visible from Manager-3 and Director-5 comments.

"IT is mainly now just a support function"

[Director-6]

"Now the support functions like IT have possibilities to affect business and even offerings to customer"

[Director-8]

"We do the things the business wants"

[Manager-3]

"Business raises the needs and IT decides how to implement"

[Director-5]

In the interviews the need for better planning rose up regarding projects and investment. Some **investments and projects are realized or started too late**. There were examples from basic infrastructure side like servers and from applications. Director-8 also raised an interesting point that the discussion on the investments should be started early enough so that the common benefits can be realized. Director-7 pointed out the reactive nature of some of the investments in the IT infrastructure area.

"We need to get to the investment discussion started early to find to common benefits"

[Director-8]

"We have been very reactive with IT changes in infra area. … There has been changes as ad hoc even though those could have be planned"

[Director-7]

The next two dynamical challenges are connected to each other. There are points towards of **the case organization not being able to plan investments in long enough span of time**. Manager-4 explained that this might be related to the reactive nature of the IT. But also the challenging financial times are mentioned as a possible reason.

"We are reacting to the technological changes"

[Manager-4]

The short scope comments might also be related **the practice of dividing larger investments to smaller phases**. Related to this challenges interviewee referred to cost and cost cutting as for example Director-6 commented, but also comments towards scope of the change were identified. Management-1 explained the practice well in the interview. The problem is that this practice might not be clear to the organization and that it is questionable if the smaller phases of a larger investment will eventually cover the planned or needed scope. It might be that only a part of the need will ever get filled. Manager-3 has at least had a case of the larger ground work being bypassed.

"Pay back times need to be short now"

[Director 6]

"I think we can now invest in a longer period. ... First of all we can look at the things from broader perspective. ... Even though we understand that the big change has to be made it can be made in smaller phases"

[Management-1]

"Fundamental IT investments seem to not have went through. ... Do not even know if these are even considered"

[Mananger-3]

The last dynamical challenge in the table 14 is **the lack of understanding the business impact or strain the IT projects bring**. IT project scope do not seem to extend to the post project phase of living with the results. Director-5 pointed out an examples of were the business work has increase after an IT project. Maybe the focus has been too much on the technological changes and not on the delivery. Manager-4 mentioned another point that there has been projects where the impacts to the business process have been all together neglected. With SAP this is not understandable as ERPs are definitely a business tool and if these process are indeed not defined or communicated, it is a definite point towards lack of focus.

"Projects are delivered in time but manual work has increased"

[Director-5]

"For example, in SAP business process are not communicated to the factory level"

[Manager-4]

7. DISCUSSION

The discussion chapter takes a broader look at the results of the empirical research. The most recognizable findings are opened further. In addition some identifiable larger groups of challenges are discussed together. The theoretical part of the thesis is used to rationalize the analysis.

7.1 General

The findings chapter listed the challenges that are identifiable from the interview data and these are the main answers to the thesis. But there is a need and possibility to have a broader look at the challenges and to open the most recognized ones further. There are some groups of challenges that can be opened together and some individual challenges worth discussing on their own. The first larger challenge group is the crossover from business to IT and especially the lack of the service mindset inside the case organization´s IT. The second topic is the processes and governance. These challenges are identified in the organization, but the effects seem not to be clear. The third discussion area is completing the change as the IT structure change seems to not be complete. Last highlighted group of challenges is communication, which is visible in challenges of all the three domains.

In the of functional challenges table 12, unmanaged relationship between business and IT was recognized by all of the interview groups, but especially in the IT group. As explained in the findings chapter this is problematic with the large amount of changes the case organization has undergone. If business and IT alignment has just evolved over time, it is questionable if the case organization can be sure it is evolving to right direction. Combined with the communication problems visible in the table 13, this ought to be a real concern in the case organization. The problematic crossover from business parts of the organization to IT is discussed in chapter 7.2. Properly planned relationship management might help to overcome some of the challenges and ensure progress is made to right direction. The importance of the crossover is for example visible in the perspectives of SAM (Table 10) as with all of the perspective crossover from IT to business is needed.

In the interviews, some evidence towards business and IT executing same things at same time was identified (Table 12; Business has information systems not acknowledge by the IT). Reynolds and Yetton (2015) highlighted in their paper that one of the goals of functional alignment is to degrease the overlapping between different entities in the organization. IT systems are part of the structural dimension and similar to Reynolds and Yetton (2015) structural alignment literature has highlighted that eliminating the overlappings is one of the main focus areas in structural alignment (Broadbent et al. 1996, Hodgkinson

1996). Thus this challenge should be seen as a practical example on the potential benefit of improving the business and IT alignment in the case organization.

Need for common strategic planning was highlighted in the structural alignment model by Broadbent and Weill (1993) (see figure 11). Also the challenges was identified in the business and IT alignment literature and listed in the table 6 (Alaceva and Rusu 2014). Thus this should also be important for the case organization. The case organization seems to have problems in both the options to contribute to strategy and in the process itself (Table 13; Lack of contribution options to strategy, unclear strategy formation process for employees). This was mainly recognized in the IT side of the organization. Thus corrective actions to IT strategy formation process and contribution options have potential to improve business and IT alignment in the case organization.

7.2 Service mindset

In the findings chapter multiple challenges were identified, which pointed out problems to the crossing over from business to IT. Business and IT did not seem to understand each other in a sufficient enough level. This is visible in more abstract challenges like lack of understanding each other environment, but also in some practical challenges like slow service delivery (Table 12, Table 13). Beside this there were some indications that business views IT only as a support function and that the IT processes do not meet the business needs (Table 12, Table 14). The crossover is a larger development area that had challenges in all of the three dimensions. Thus understanding it through smaller entities is necessary. Mainly from the functional and dynamical challenges, one theme could be identified in multiple occasions and this theme is service and service delivery. In SAM one of the four perspectives was the service level perspective (Table 10), which is illustrated in the figure 15. Service level perspective aims to improve the customer satisfaction (Henderson and Venkatraman 1993), which seems to be a definite need in the case organization and could be a solution to some of the challenges identified in the empirical study.

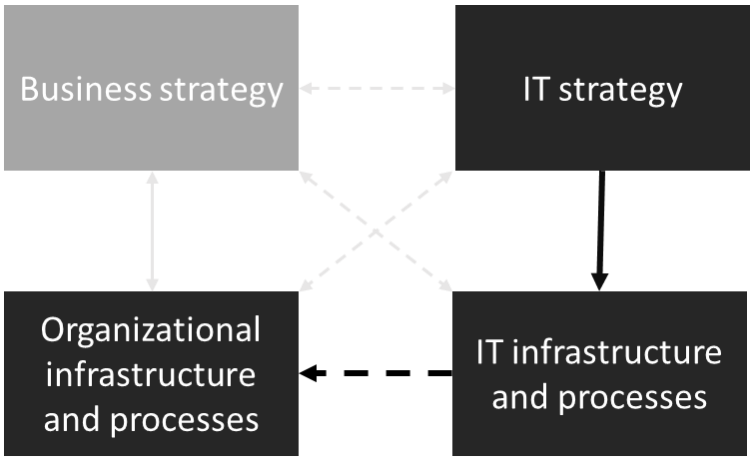

Figure 15. *Service level approach from Strategic Alignment Model*

It is important to understand that the service level perspective starts from the IT strategy. Thus improving the situation ought to start from the IT strategy. The case organization has done a lot of improvement in the infrastructure level. For example a new truly global service desk partner has been introduced in addition to large structural and technological changes. These changes should have improved the service level. Yet the empirical study lists multiple challenges related to the service delivery. One explanation is that challenges originate from insufficient strategic guidance and goals. Thus service focus in strategical level and more specifically in the IT strategy could help to solve these problems.

The next step in the service level approach is the IT infrastructure level and then followed by the delivery of the services to the business. In the empirical study there were clear challenges related to these levels as well. Continuous service is seen slow and escalation seems to be needed to get some of the services delivered (Table 13). For some reason the extensive improvement projects and structural changes have not at least yet led to benefits in the service level perspective. One explanation is the goals of these projects. In the interviews there were some examples that these improvement project were seen as technical improvements and thus the delivery to the end users is still in progress. The comments from Director-5 (page 51) and Manager-4 (page 50) related to challenge of IT not supporting business processes, had points were IT service or project was not in reality delivered to the end users or to the business level. Even though it was not explicitly mentioned in the interview data it is arguable that the case organization does not sufficiently take the business and end user perspective to account with IT activities and projects.

Understanding the scopes of the projects all the way to the end and the needs of the end users could be improved through the principles of the service level perspective in SAM. Challenges related to the service level perspective mainly manifested in the business and IT interface. Yet is necessary to understand that solving these challenges ought to start from the IT strategy. This clear from the Henderson and Venkatraman (1999) service level perspective. Afterwards on practical level best practices and standards could be utilized to improve the problematic crossover between business and IT. For example in ITIL

v3 there is an entire book dedicated to continuous service delivery, which purpose is to improve the alignment between the IT services and the ever changing business needs (Office of Government Commerce 2007). Another maybe more fitting standard for the case organization is the IT Standard for business. IT Standard for business is developed by the ICT Standard forum, which includes other companies with similar structure and size as the case organization. IT Standard for business is built to support IT management and decision making but can be utilized also for training purposes, which could help the case organization. (ICT Standard Forum 2016).

7.3 Process building

Another larger set of challenges identifiable from the empirical results is the lack of focus to governance and more specifically to processes and practices. This set of challenges is closer to the structural dimension of business and IT alignment than the previous one. In the table 13 of structural alignment challenges, there are also other challenge areas not related to process, such as unclear organization structure. Why the process challenges are worth highlighting is that with most of the other challenges, identified in the structural alignment dimension, had also positive comments related to them. For example the change in organization structure seem to still be in progress, thus the challenge still remains, but it is being improved. With processes and practices there were no positive comments from the interviewees nor evidence that improvement actions have or are being planned to be implemented. Additionally to this management-1 (page 55) directly states that processes are not a development focus area in the organization at the moment. This is problematic because there are identified challenges, which are directly connected to immature processes and practices.

In the findings process challenges were connected to service delivery, communication, cooperation and even resourcing (Table 12, Table 13, Table 14). It is not clear if the poor processes are the root cause of the challenges, but it is clear that the challenges realize through processes. This alone ought to be enough of a proof and encouragement for the case organization to want to improve its processes. There are challenges even in utilizing the existing process in the case organization (Table 13; Underutilized processes) and a definite need for clearer processes and practices (Table 13; Not defined processes or governance). Director-8 (page 56) states that one of the biggest challenge in the alignment is in the processes and practices. Management-1 (page 56) argues that the lack of focus in processes and practices is replaced and even made obsolete by the focus on organization structure. Based on the empirical findings this is not the case. This raises a concern that the case organization does not understand the need for sufficient processes and practices. It is also possible that the organization has hard time of implementing working and beneficial processes. Clearer processes could solve some of the challenges connect to the unclear roles (Table 13) inside the case organization.

For the reasons shortly opened above highlighting the need for clear processes, practices and accountabilities is beneficial. The structural alignment model by Broadbent and Weill (1993) explains what the components of proper structural alignment are and the model can be utilized to assess the structural dimension of business and IT alignment. The model does not explains how to build sufficient and working processes and practices. For this purpose one possibility is to again refer to standards and best practices. ITIL v3 has some practical guidelines especially when it comes to services (Office of Government Commerce 2007). COBIT 5 is another example of a standard, but focuses in more practical techniques than ITIL v3 (ISACA 2016).

7.4 Understanding change

As mentioned earlier, conducting dynamical assessment with just cross sectional empirical study is challenging. Yet from the interview data it was possible to find still pending dynamical changes (Table 14) and combining these findings with the near history events of the case organization, one dynamical focus area is worth highlighting. It seems that organization has not yet completed the desired changes. The dynamical alignment perspective can help to understand the problem areas and possibly guide to the right direction with the problem solving.

The insufficient reaction to change challenge in the dynamical dimension (Table 14), arises from practical problems mentioned in the interviews. Beside this there were indication in other challenges which argue that the case organization has not understood the whole scope of change it has undergone. Previously explained lack of focus in processes is one example of this. There is also evidence pointing out the effects of still pending structural changes. The challenges in roles (Table 13; Roles are not clear enough) and communication over organization units (Table 13; Lack of communication between organizational units) point towards still pending completion of the structural change. Even though the structural changes in paper might be completed and larger outlines clear, the practicalities seems to still be unclear and not agreed up on. From all of these challenges it seems that the move from shared IT to one global centralized IT seems to be still pending and in progress. Figure 16 illustrates the challenge areas by utilizing the Sabherwal et al. (2001) dynamical alignment model.

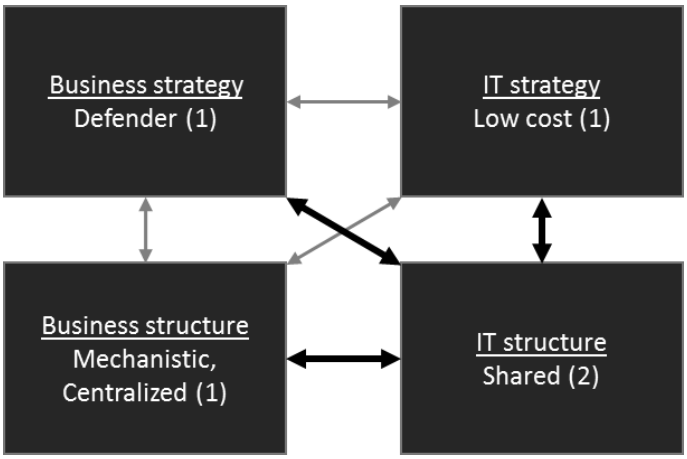

Figure 16. *Dynamical alignment challenge areas in the case organization*

According to Sabherwal et al. (2001) model, centralized IT structure is the optimal target for the case organization. The case organization is involved in a traditional industry business. Their product lines have been constant and the development happens inside product lines. High quality and efficient products are the focus in the case organization. IT strategy has many indications to lower the cost which for example is visible from the attitude towards projects (Table 14; large investments need to be divided into smaller units to get them approved). Yet the shared IT structure is noticeable inside the case organization as discussed earlier. The figure 16 highlights the pain areas that this mismatch should theoretically produce and there are identified challenges in all of the connections. For example between business strategy and IT structure there are problems of IT not answering to the business needs (Table 12; IT processes do not support business processes). Between business and IT on operational level there seems to problems with slow deliveries (Table 13; The continuous service process does not work and is slow). Finally between IT strategy and structure there are problems of understanding the strategy (Table 13; Strategy is not communicated properly).

From the interview data there were no indications that the structural changes would not have been already executed also no additional structural changes were not mentioned. Concern of the service desk outsourcing were identified (Table 12; Outsourcing local IT resources causes knowledge bleed and lower customer satisfaction), but at the same time this change was expected to bring better service level. This means the case organization seems to feel that their structure is in a good state. The challenges listed above argue against this. Based on the interviews, IT still has parts of the old decentralized regional nature inside it. Roles are not clear and locating decision makers and owners has some challenges. The case organization ought to further investigate if the structural changes are indeed complete or if any additional adjustment is needed. Roles and responsibilities should be redefined and clear communication of the changes ought to be executed.

7.5 Communication

Communication challenges were among the most anticipated challenges that could be found from the empirical research. Based on the literature review (Table 6) and the fundamental connection that the business and IT alignment has to communication (Table 5; Information Exchange), it was no surprise that communication challenges were identified from the organization. In the end all of the three dimension had challenges with communication components. Thus it beneficial to further examine the different challenges and the possible connections between them.

In the functional alignment dimension the challenge with use of different languages was identified in the case organization (Table 12). This challenge has even some practical problems within it as Director-2 (page 52) highlighted this by explaining the problems in understanding the deliveries of a project. In the interviews it was mentioned that this could be solved by just encouraging personnel to talk to and help each other. Communication was also part of the knowledge cap challenges (Table 12). These were identified in both environment related knowledge and in general. Environment knowledge should be shared and the Manager-1 (page 50) successfully highlighted that better business knowledge leads to better solutions. Manager-2 (page 50) pointed out that also business managers should try communicate to IT. Thus communication is a challenge for both of the parties. The last challenge on the table 12 was unclear strategic fit. This was only realized at the business and IT interface. It was not clear if the problem is due to general communication problems or lack of strategic alignment. Nevertheless it might be interesting for the case organization to investigate the reasons behind this finding.

Communication challenges were mainly placed to the structural dimension as communication can be seen to be a process or practice of its own. It is clear that more communication, both informal and formal between IT and business is needed. Functional challenges showed that the knowledge cap is definitely visible (Table 12; Knowledge gap between IT and business) and in the structural alignment dimension six out of 15 challenges have clear communication connections (Table 13). Also the four most widely recognized challenges were related to communication. The top level communication was seen as working well, but the team level and official formal forums were seen to be too inadequate (Table 12; Lacking communication of strategy on team level). The need was identified but solutions seem to still be looked for. In addition different SBUs seem to be in different maturities when it comes to communication. SBU 2 business IT was baseline for in the merge to create the global IT function that is operational in the case organization at the moment. Thus business representatives in SBU 1 seem to have harder time communicating and staying informed about IT. This will most likely get better over time but ought to be recognized in the case organization.

In the dynamical dimension communication problems were mainly connected to projects (Table 14). Projects are example for entity that needs both formal and informal communication. In the functional challenges list it was stated that better business knowledge leads to better solutions (Manager-1, page 50), other side of this is that sometimes the solutions are just very complicated. This was noted by the Manager-3 (page 58). Eventually the communication challenges realize in the dynamical dimension as unclear project goals and too late actions (Table 13). The case organization ought to find better tools or more efficiently utilize the existing tools to facilitate the communication inside and between business and IT. Also based on the knowledge cap challenges (Table 12), visibility should be increased to ensure the employees have a change to learn each other's environments and have something to base the communication on.

8. CONCLUSIONS

Conclusion summarizes the thesis. Answers to the research question and problems are explained in a compressed manner. Also evaluation of the research and its methods are explained below. Finally the future research options that could be explored to develop business and IT alignment further are discussed at the final paragraph of the thesis

8.1 Summary

The main research question of the thesis was to identify the current business and IT challenges in the case organization. To answer to this question, business and IT literature was reviewed with aim to find most current methods of assessing the challenges. These methods were then utilized through interviews in the case organization to determine the current challenges. At the end, form all the three dimension total of 32 challenges were identified (Table 12, Table 13, Table 14).

Business and IT alignment is a mature topic among IT literature. Business and IT alignment research dates back to 80´s and one of the most iconic models originating from this research, SAM, is still often referred to. From the introduction of SAM, business and IT alignment has evolved over time and has stayed relevant among the IT management around the world. The new and arising themes in the business and IT alignment are the multi-level and holistic approaches to the business and IT alignment. A holistic view was also a focus are in this thesis. Thus even the chosen definition of the term business and IT alignment is as a broad one. *Business and IT alignment is the degree to which the IT application, infrastructure and organization enable and support the business strategy and processes, as well as the process to realize this* (Silvius 2009). This definition summaries well what business and IT alignment in this thesis means.

For organizations, business and IT alignment seems to be a constant challenge. Business and IT alignment can be seen to be a continuous process to be more efficient. In this thesis few example of the benefits were introduced and explained (see chapter 3.2). Proper business and IT alignment can have positive impact to the financial gain of an organization and flexibility of both in IT and business. Beside this the enabling nature of business and IT alignment was argued to be one of the benefits and reason to aim for aligned business and IT operations. There are also clear and to a degree constant challenges in business and IT alignment. Communication, top management support, extensive strategy formation and working partnership between IT and business are some of the key success factors or enablers that are needed for proper business and IT alignment. These all have timeless challenges connected to them. For example communication has to change along with any major development or evolution.

To ensure a broad and holistic assessment of the business and IT alignment, the multi model approach by Reynolds and Yetton (2015) is as good framework the base the assessment on. The multi model approach divides business and IT alignment in three dimension. Functional dimension addresses the strategic fit of the organization on both and IT and business side including the guiding infrastructure principles. Structural alignment focuses on the structural fit between the reality in the organization and strategic needs it ought to fill. Finally the dynamical alignment dimension aims to address the punctual and changing components of business and IT alignment. To aid in the analysis of each of the dimension, an already existing model was selected and used as a guideline in the assessment. Beside the dimension multi model approach takes into account the multi business nature of organizations. This adds to the holistic perspective of the model.

In the case organization a theme interviews was conducted for 14 interviewees (Table 11). Interviewees were divided to three different organization groups; business, business and IT and IT. Interviewees were selected from different parts of the organization and from different levels, but all of them have at least managerial level roles and were accountable of some parts of operations. With the limited number of interviews this ensured large enough visibility to the global organization. From the interviews 32 challenges were identified (Table 12, Table 13, Table 14). There were large potential development areas or groups challenges that based on the interviews could be focused on. The scope of the research was in identifying the challenges and not in prioritizing them. The challenges are the result of the research. Some were identified in all of the interview groups and some challenges were mentioned in only parts of groups. From the results the case organization ought to be able continue to development activities and prioritize the areas they see most urgent. Business and IT alignment is not necessarily its own activity inside organizations, instead it should be part of all of the activities. Thus improving the business and IT alignment can have multiple approaches and each organization should find their own ways.

8.2 Evaluation of the research

This research achieved its goals. 32 challenges were identified from all of the dimensions. The holistic view was ensured by including the MBO characteristic of the organization through the multi model approach and interviewee selection. In addition different levels and parts of the organization were included and utilized in the analysis. All of this should provide sufficient and holistic view to the actual and existing challenges in the case organization. That being said there were clear limitations and challenges that research was subjected to. First the case organization is a large global entity with over 12 000 employees. This means 14 interviewees even when carefully selected provide only a limited view to the status of the case organization. Beside this two of the three interview groups had mainly IT personnel on them. These limitations are to a degree unavoidable, but are important to remember and have to be mentioned.

The emphasis on intensive and holistic view to the business and IT alignment created some problems. In this thesis the three dimensions, three interview groups and MBO nature were included in the analysis. This of course increased the holistic view, but also made it harder to point out or even locate possible root causes or provide in-depth analysis. With more holistic view, at least in this thesis, the option for in-depth views to challenges was lost. Just the utilization of the three chosen models for each of the dimension, made it so that the analysis would not be as in-depth as when utilizing one model on its own. In the end, this a question of the goals of the research, if an organization has specific problem maybe more focused methods should be utilized. Then again if holistic view is needed, based on the findings of this research, multi model approach or similar frameworks can be used.

8.3 Future research options

In the business and IT literature multi model approach introduced by Reynolds and Yetton (2013) has not been widely utilized yet. Only the studies conducted by Reynolds and Yetton (2015) and one case study by Pekkola and Nieminen (2015) were found to utilize this approach. This means that the model has not been broadly tested in an academic level. Thus it is beneficial to provide possible future research options based on the findings of this thesis.

The first improvement area from an academic point of view would be a more accurate use of scopes with the dimensions. In the multi model approach dimensions are based on existing business and alignment models. These models like the SAM actually extend over the dimensions. Thus better and clearer focus areas in the dimensions would make it easier to utilize the model in academic assessment and research. Question like what are the key focus areas for each dimension, would be possible future research area for the academic community.

For organization and academic communities and longitudinal business and IT alignment research utilizing the multi model approach could be an interesting next step. As the dynamical dimension focuses on change and time aspects of the business and IT alignment, this part will remain only partly utilized with cross-sectional research. With just a cross-sectional research the multi model approach and this thesis, slightly focus on the functional and structural dimension of business and IT alignment.

REFERENCES

Alaceva, C., & Rusu, L. (2014). Barriers in achieving business/IT alignment in a large Swedish company: What we have learned? Computers in Human Behavior.p.14

Bharadwaj, A., El Sawy, O., Pavlou, P. & Venkatraman, N. (2013). Digital business strategy: toward a next generation of insights. MIS Quarterly Executive, Vol 37(2), pp. 471-482.

Bradley, R., Pratt, R., Byrd, T., Outlay, C. & Wynn Jr, D. (2012). Enterprise architecture, IT effectiveness and the mediating role of IT alignment in US hospitals. Information Systems Journal. Vol. 22(2), pp. 97-127.

Broadbent, M. & Weill, P. (1993). Improving business and information strategy alignment: Learning from the banking industry. IBM Systems Journal. Vol 32(1).

Broadbent, M., Weill, P., Brien, T., & Neo, B. S. (1996). Firm Context and Patterns of IT Infrastructure Capability (Best Paper Award). ICIS 1996 Proceedings, 13. pp. 174-195.

Bryman, A. (2012). Social research methods. 4th Edition. Oxford University Press. p. 766.

Campbell, B. (2005). Alignment-resolving ambiguity within bounded choices. In Proceedings of PACIS. Paper 54. pp. 657-669.

Chan, Y. & Reich, H. (2007a). IT Alignment: What have we learned? Journal of Information Technology. Vol. 22, pp. 297-315.

Chan, Y. & Reich, H. (2007b). IT Alignment: An annotated bibliography. Journal of Information Technology. Vol. 22, pp. 316-396.

Chen, H. (2008). Towards service engineering: service orientation and business-IT alignment. In Hawaii International Conference on System Sciences, Proceedings of the 41st Annual. pp. 114-114.

Coltman, T., Tallon, P., Sharma, R. & Queiroz, M. (2015). Strategic IT alignment: twenty-five years on. Journal of Information Technology. p. 10. Available: http://www.palgrave-journals.com/jit/journal/vaop/ncurrent/full/jit201435a.html#Introduction.

Computer History Museum. (2015). Timeline of Computer History. Website. Available (Accessed on 7.5.2015): http://www.computerhistory.org/timeline2014/computers/.

El-Mekawy, M., Rusu, L., Perjons, E., Sedvall, K. J. & Ekici, M. (2015). From Theory to Practice: Barriers to Business-IT Alignment in Organizations Acting in Sweden. 2015 48th Hawaii International Conference on System Sciences (HICSS). pp. 4523-4533.

Gartner. (2015). Gartner IT Glossary. Website. Available (Accessed on 24.7.2015): http://www.gartner.com/it-glossary/it-information-technology.

Gerow, E., Thatcher, B. & Grover, V. (2014). Six Types of IT-Business Strategic Alignment: An investigation of the constructs and their measurement. European Journal of Information Systems. Vol. 24(3), pp. 1-27.

Google Scholar. (2016a). Website. Available (Accessed on 17.4.2016): https://scholar.google.fi.

Google Scholar. (2015b). Website. Available (Accessed on 24.9.2015): https://scholar.google.fi/scholar?q=Enablers+and+inhibitors+of+business-IT+alignment&btnG=&hl=fi&as_sdt=0%2C5

Henderson, J. & Venkatraman, N. (1990). Strategic Alignment: A model for organizational transformation via information technology. Cambridge, MA: Sloan School of Management, Massachusetts Institute of Technology. Working Paper No. 3223–90.

Henderson, J. & Venkatraman, N. (1999). Strategic Alignment: Leveraging Information Technology for Transforming Organisations. IBM Systems Journal. Vol. 32(1), pp. 4-16.

Hirsjärvi, S., Remes, P. & Sajavaara, P. (2007). Tutki ja kirjoita. 13th edition. Kustannusosakeyhtiö Tammi. Helsinki. p. 448.

Hodgkinson, S. (1996). The role of the corporate IT function in the federal IT organization. Oxford University Press. Oxford, UK. pp. 247-269.

ICT Standard Forum. (2016). T Standard for Business. Website. Available (Accessed on 10.4.2016): https://www.itforbusiness.org/

Investopedia. (2015). Dictionary. Website. Available (Accessed on 24.7.2015): http://www.investopedia.com/terms/b/business.asp

ISACA. (2016). About COBIT 5. Website. Available (Accessed on 10.4.2016): https://cobitonline.isaca.org/about

Kappelman, L., McLean, E., Johnson, V., & Gerhart, N. (2014). The 2014 SIM IT Key Issues and Trends Study. MIS Quarterly Executive. Vol. 13(4), pp. 237-263.

Kathuria, R., Joshi, M. P., & Porth, S. J. (2007). Organizational alignment and performance: past, present and future. Management Decision. Vol 45(3), pp. 503-517.

Kirjanpitolaki, 30.12.1997/1336. (1997). Website. Available (Accessed on 4.1.2016): http://www.finlex.fi/fi/laki/ajantasa/1997/19971336

Luftman, J. & Ben-Zvi, T. (2010). Key issues for IT executives 2010: judicious IT investments continue post-recession. MIS Quarterly Executive. Vol. 9(4), pp. 263-273.

Luftman, J. & Brier, T. (1999). Achieving and Sustaining Business–IT Alignment. California Management Review. Vol, 42(1), pp. 109–122.

Luftman, J. (2004). Assessing Business-IT Alignment Maturity. Strategies for Information Technology Governance. pp. 99-128.

Luftman, J., Papp, R., & Brier, T. (1999). Enablers and inhibitors of business-IT alignment. Communications of the AIS. Vol. 1(3), p. 33.

Miles, R, Snow, C, Meyer, A, & Coleman, H. (1978). Organizational strategy, structure, and process. Academy of management review. Vol. 3(3), pp. 546-562.

Ministry of Employment and the Economy. (2015). Palvelutalouden murros ja digitalisaatio – Suomen kasvun mahdollisuudet. MEE Publications. p. 132

Office of Government Commerce. (2007). The Official Introduction to the ITIL Service Lifecycle. The Stationery Office. United Kingdom. p. 238.

Oh, W. & Pinsonneault, A. (2007). On the Assessment of the Strategic Value of Information Technologies: Conceptual and analytical approaches. MIS Quarterly. Vol. 31(2), pp. 239-265.

Pekkola, S. & Nieminen, N. (2015). Comparison of Functional, Structural, and Dynamic Business-IT Alignment Models: A Case Study. Proceedings of the 21st Americas Conference on Information Systems (AMCIS'15).

Rathnam, R., Johnsen, J. & Joseph Wen, H. (2005). Alignment of business strategy and IT strategy: a case study of a fortune 50 financial services company. Journal of Computer Information Systems. Vol. 45(2), pp. 1-8.

Reynolds, P. & Yetton, P. (2013). Aligning Business and IT Strategies in Multi-Business Organizations. International Conference for Information Systems 2013.

Reynolds, P. & Yetton, P. (2015). Aligning Business and IT Strategies in multi-business Organizations. Journal of Information Technology. Vol. 30(2), pp. 101-118.

Rozendal, A., Lim, E. & Tan, C. (2015). A Change for the Better: Realizing Business-IT Alignment Through Organizational Change. In 23rd European Conference on Information Systems (ECIS) 2015.

Saaranen-Kauppinen, A. & Puusniekka, A. (2006). KvaliMOTV - Menetelmäopetuksen tietovaranto. Tampere: Yhteiskuntatieteellinen tietoarkisto. Available (accessed on 23.7.2015): http://www.fsd.uta.fi/menetelmaopetus.

Sabherwal, R. & Chan, Y. (2001). Alignment between business and IS strategies: A study of prospectors, analyzers, and defenders. Information systems research. Vol 12(1), pp. 11-33.

Sabherwal, R., Hirschheim, R. & Goles, T. (2001). The Dynamics of Alignment: Insights from a Punctuated Equilibrium Model, Organization Science. Vol. 12(2), pp. 179-197.

Saunders, M., Lewis, P. & Thornhill, A. (2009). Research methods for business students. 5th edition. Pearson Education. United Kingdom. p. 614.

Sidhu, B. & Gupta, K. (2015). A Critical Study of IT Transformation Practices to Achieve Business IT Alignment. International Journal of Emerging Trends in Science and Technology, Vol. 2(04), pp. 2289-2299.

Sidhu, B. (2013). Demystifying business IT alignment. International Journal of Science & Technology, Vol. 3(1), pp. 20-26.

Silvius, G. (2009). Business and IT Alignment: What We Know and What We Don't Know. 2009 International Conference on Information Management and Engineering. pp. 448-563.

The Society for Information Management. (2015). Website. Available (Accessed on 14.8.2015): https://www.simnet.org/

Ullah, A. & Lai, R. (2013). A systematic review of business and information technology alignment. ACM Transactions on Management Information Systems. Vol. 4(1), p. 30.

APPENDIX A: THEME INTERVIEW QUESTIONS

Theme: Strategy

1. In short how does the organizations strategy formation process work?
2. Is the strategy communicated to you somehow?

Theme: Relationship

3. What is the relationship between IT and business in general in our organization?
4. Is the relationship planned to support the strategic goals?
5. Do you think the relationship as you described is executed in reality?
6. Does the organization monitor and manage the IT and business relationship?

Theme: Processes and structure

7. Does the organization have clear accountabilities and roles (to get to the goals?)
8. How well does the organization structure at the moment support IT and business alignment
9. How well does the organization structure at the moment support IT an business alignment

Theme: Investment

10. How do you see, what is the attitude IT investments in the organization at the moment?
11. Does this attitude towards investments support the business goals?